# Understanding Web 3.0 – The Semantic Web

How the evolution to a third generation of the Web will impact upon the Internet and media environment within a global and South African context.


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**COMPULSORY DECLARATION**

**This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.**

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**Abstract:**

This thesis examines the potential evolution of the current version of the Internet, popularly referred to as Web 2.0, to a third generation of the Web, referred to as the Semantic Web or Web 3.0. The paper provides an overview of the change in architecture and structure that the current version of the Web will need to undergo in the form of a standardised ontology development in order for the Web to evolve. The evolution to a third generation of the Web will ultimately improve the overall user experience both within a global and South African online context, through the innovation and development of Semantic Web technologies and capabilities. The thesis also discusses the role of the political economy of media and how this concept needs to be refreshed in terms of dealing with the advent of "new" or digital media which are characterised by the Internet. The role of traditional media is also discussed and how, due to the advent of the Internet, there has been a movement away from a model of traditional centralised media to one of a more decentralised model. The challenges of intellectual property rights and copyright are analysed in terms of online users developing their own content online in the form of user generated content and how, through the evolution to a Web 3.0 version of the Internet, these challenges can be potentially solved through the use of Semantic Web innovation and technologies. One of the major challenges which Web 2.0 currently faces is that of privacy infringement, but through the adoption of Semantic Web technology these challenges which currently affect all users on the Web can potentially be solved. Finally, the paper looks at the way that South African online users interact with the Internet and how the potential evolution to a third generation of the Web could potentially impact their user behaviour online.

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To Ronald Joseph Chetty. My father and earliest teacher.

For always believing in me.

**Introduction:**

The Semantic Web can be described as the extension of the current Web in which information found online is given well-defined meaning, as well as a place where machines can analyse all the data available on the Web (Shirky 2003). The origins of the Internet can be traced back to 1970, when the Advanced Research Projects Agency (ARPA), which was located in the US Department of Defence, initiated a project that led to the development of the Internet. ARPANET was the outcome of the US military's work and was launched in 1970 with the distinct objective of facilitating "resource-sharing among users on a national scale" (Bollier 2003:102). According to one of APARNET's founders – Eric S. Raymond – "APARNET was the first transcontinental, high-speed computer network" (Raymond 1999:20), which then eventually went on to link to universities, defence contractors and research labs (Haupt 2008). The APARNET network can be credited as one of the most important inventions in the eventual birth of the Web which we have come to know today, due to the fact that it allowed researchers to have the ability to exchange information and be able to communicate with great speed and flexibility (Raymond 1999: 20). The advanced development of the Web and the cornucopia of information it provides has only been in existence for just over eighteen years. During that period of time, the Web has evolved into three versions. Web 1.0 or the Information Web, was straight forward enough. It was full of static content and could be seen as an extension of off-line media, such as print and television. This version of the Web is able to provide information to users in a broadcast model of information dissemination. The next evolution of the Internet brought about Web 2.0 or the Social Web which is characterised by users communicating, contributing and collaborating. Social networking, live chat, folksonomies, mash-ups, virtual worlds and even mobile media are part of Web 2.0. This collaboration and sharing breaks down the traditional media broadcast model or monolithic method of communication and content generation characterised by the previous generation of the Web (Castells 2001). Web 2.0 has empowered users and consumers of the Internet to shift from being passive consumers of content and information into active producers of content and information. The next forecasted phase in the evolution of the Web, Web 3.0, has been described as the Semantic Web. This version of the Web derives its "wisdom" from software that learns by looking at online content, analyses the popularity of that content and has the ability to draw conclusions. In other words, instead of users refining information and opinion online, intelligent software would have the ability to do the

same thing. Web 3.0 is described as the Semantic Web because software has the power to learn, intuit and decide.

This thesis seeks to explain the proposed evolution of the current Web 2.0 version of the Web into a Web 3.0 version through the development of a standardised Web Ontology Language (OWL) that will allow all content found on the Web to infer meaning automatically and offer insights or information which otherwise would not have been apparent (Stewart 2010). The paper will also analyse the media environment and how traditional media is attempting to cope with the current digital evolution which is facilitating a transition from a model of centralised to decentralised media practice. The role of user generated content (UGC) will also be examined as well as how the role of copyright and intellectual property rights have stunted the amateur production of content online and how the evolution to a third generation of the Web will potentially offer a panacea to this challenge through the form of Semantic Web copyright solutions (Prenafeta 2010). The thesis will also discuss the role of privacy online and how the issue of online privacy for users remains a major concern on the Internet. Two solutions will be discussed in the form of a Semantic enforcement of privacy protection policies via the combination of ontologies and rules (Yuh-Jong, Hong & Guang 2008), as well as an approach to privacy enhancement in the form of an access control model (Cho, Moon, Park & Baik 2008) which a Semantic Web would be able to offer online users. Finally, the thesis analyses the role that the Internet plays within a South African online context, understanding the way South Africans, who were interviewed for the purpose of this thesis, interact online and consume the Web and what, if any, effect a Semantic Web would have on their use of the Web.

The overarching research question that this thesis seeks to understand and answer, is what effect and potential outcome a proposed evolution to a third generation of the Web will have upon the Internet not only as a network – in terms of the Web's current architecture – but also within the media and communications environment in a global and South African context. The key problem statement that is addressed in the research findings of the thesis is investigating the role that Internet privacy will facilitate as a fundamental variable in the potential evolution and ultimate consumer adoption of a Semantic version of the Web, specifically within a South African online user context.

**Thesis Statement:**

The goals of this thesis are multiple. First, it seeks to describe the evolution the current Web 2.0 version of the Internet will need to undergo if a realisation of a Semantic Web or Web 3.0 is to become a reality. The thesis will attempt to convince the reader that a potential Semantic Web version of the Internet will ultimately improve the current version of the Web and in turn will be able to offer online users more in terms of functionality and usability on a Web 3.0 version of the Internet. The concept of the political economy of media studies are analysed as well as the limitations in the study of the political economy of new media, which is a relatively new concept since the advent of the Internet and other digital technologies. The political economy of new media studies has placed an emphasis on actual media content with less of a focus on media structures as well as the labour involved in the production of media. The thesis attempts to make the argument that the political study of new media should focus specifically on the understanding and development of explanations for emerging social structures and hierarchies of power. The role of traditional media within the digital world are also discussed as well as traditional media's attempt at making use of legislative and governmental intervention as a tactic to cope with the dynamic new media environment. The role of UGC as well as intellectual property rights and copyright are analysed and how, through the adoption of Semantic Web technologies and innovations, a solution to this challenging problem may be developed which would also encompass current copyright initiatives such as the Copyleft movement and the Creative Commons (CC). The role of privacy online are also analysed with Semantic Web technologies and innovations also proposed as a potential solution to these challenges. Finally, the role of the Internet in a South African context is discussed as well as how a potential Semantic Web may affect these users.



**Thesis Structure:**

Following the introduction to this thesis, the thesis will continue with chapter one, which will provide an overview of the various stages that the Internet has evolved from, including the current version of the Web 2.0 version of the Web. The chapter will also discuss in detail the structural, architectural and ontological change the Internet would need to undergo for the realisation of a Semantic Web to occur. These changes which the Web will need to undergo from an architectural standpoint will be crucial in discussing how the Web will evolve from its current

version, to a Semantic Web and will serve as the platform from which the rest of the chapters in this thesis build upon in terms of highlighting the benefits of a Web 3.0 version of the Internet.

Chapter two will discuss the role of the study of the political economy of media. The limitations of current academic research pertaining to the concept of the political economy of "new" media is also discussed as well as the role that technological and digital innovation has had on the subject of media studies are analysed. The chapter looks at the political economy of new media studies, and places an emphasis not on the actual media content, but with a focus on media structures and on the labour involved in the production of media. This chapter attempts to make the argument that the political study of new media should focus specifically on the understanding and development of explanations for emerging social structures and hierarchies of power. This chapter sets up the discussion of chapter three, where the role of traditional "old" media is analysed and forms the theoretical framework from on which chapter three builds on.

Chapter three presents an analysis on the role of traditional media and how old media companies are attempting to compete within the new digital media environment. The role of government intervention and legislation is discussed as well as how traditional media have to rethink their business strategies as media models move from a traditional centralised to decentralised model. This chapter is essential in understanding the current challenges of the current media environment and how the advent of the digital era is currently revolutionising the Web through the migration from a centralised "broadcast" era of media and communication which is characterised by traditional or "old" media, to a concept of distributed "networked media" which has been facilitated by the rise of the Internet and digital media. The economics of centralised media is an important aspect in this chapter as it sets up chapter four's discussion of how UGC within digital media is currently affecting the media environment and the subsequent measures and policies that traditional media are attempting to enforce to curb the current and potential future development and innovation of the Web.

Chapters four and five discuss the role of copyright and intellectual property in terms of UGC content online. Chapter four analyses the role that the threat of copyright infringement and P2P "piracy" plays in deterring the production of UGC among users. The chapter also proposes a Semantic Web technological solution to the challenges of copyright infringement which is supportive of movements such as Copyleft and CC. Chapter four attempts to discuss and analyse

the current measures which have been put in place in terms of agreements and legislation which has been implemented to assist in the control over copyright issues and proprietorship. Chapter five looks at the threat of online privacy and how online user information can be manipulated by third parties online. This chapter builds off what was discussed in chapter four, and highlights what a potential Semantic Web can offer in the form of credible solutions to the challenges which the current version of the Web faces as well as the users of Web 2.0. The chapter concludes with two Semantic Web solutions to the problem of privacy which would facilitate a much safer environment for the exchange of information and content with a Web 3.0 version of the Internet.

Finally, chapter six concludes with an analysis of online user behaviour within a South African Internet user context. Respondents interviewed for the purpose of this thesis discuss how they connect to the Web, what media they consume, what content they produce online as well as how regularly they have access to the Internet. The role of online privacy is also discussed and the potential evolution to a Semantic Web is examined as a potential solution to online privacy fears within a South African user context. The final chapter of the thesis is important as it highlights the challenges that South African online users face when making use of the Web and how, through the potential evolution of the Web, these challenges could be addressed which in turn would make a Semantic Web version of the Internet more appealing to South African online users than that of a Web 2.0 offering.



**Methodology:**

The data gleaned for the purpose of this thesis makes use of both quantitative information and qualitative insight. Semi-structured qualitative interviews were conducted with expert proponents within the Internet and online environment in South Africa. They include the CEO of Media 24, a South African media business which is Africa's leading publishing group - with business interests in newspapers, magazines, internet businesses and book publishing - an academic who specialises in Information Technology at the University of Cape Town, as well as a respected academic and writer who focuses on Digital Rights Management. Each interview lasted approximately one hour. The interviews served to highlight main discussion points as well as un-covering specific Internet and Web-based trends and developments that provided additional insight and value when researching the evolution of the Web, from Web 2.0 to Web 3.0 and what

effect, if any, it will have on the South African online user and media environment in general. The information that these semi-structured interviews have been able to glean, provided valuable insight when interviewing the respondent sample as the researcher attempted to uncover how South African online users interact with the Internet and how the next stage of the evolution from Web 2.0 to Web 3.0 will affect these respondents and their current and future online behaviour.

Once the semi-structured qualitative interviews were completed with the selected Internet and online experts, one-hundred in-depth qualitative interviews were conducted using a purposive non-probability sampling method which was used to identify respondents to interview for the purpose of the research paper. Adam Kerlinger (1986) describes purposive sampling as another type of non-probability sampling, which is characterised by the use of judgment and a deliberate effort to obtain representative samples by including typical areas or groups in the sample. A sample of one-hundred respondents (non-gender, age or race specific), who populate Living Standard Measure (LSM) L9H to L10H levels in South Africa were interviewed. LSM ratings L9H, L10L and L10H refer to the new LSM rating scale released by the All Media and Products Survey (AMPS) in 2008. LH9 refers to LSM level 9 High, L10L refers to LSM 10 Low and L10H refers to LSM 10 High. These three LSM levels are characterised by households that earn upwards of R18, 079 per month. For the basis of this thesis, these LSM levels were selected as these groups have regular access to the Internet compared to other LSM categories within South Africa. Each in-depth interview lasted approximately thirty-minutes with projective research techniques being implemented astride with the in-depth interview process, in an attempt to elicit deeper thoughts and insights from the targeted respondents surrounding their access or lack thereof to the Internet as well as understanding their online user behavioural patterns.

Respondents interviewed were also geographically representative from across South Africa. Respondents who lived in Cape Town were interviewed in a direct one-to-one setting by the researcher. Respondents from outside Cape Town were interviewed telephonically or via e-mail correspondence. The use of open-ended questions when conducting in-depth interviews with research respondents also led to additional useful insight into consumer attitudes and user behavioural patterns toward online user adoption regarding the use of the Internet as well as how users have made use of Web tools such as social media and networking in their daily lives, specifically within a South African context. The additional research insight gleaned from this

study could lead to a broader research project in the future into the key aggregators that influence online users in South Africa not being able to make full use of the potential the Web affords other online users in other parts of the developing world which could provide a theme for further study.

The primary research conducted for the purpose of this thesis is also supplemented by a TNS Research Survey which was conducted for MWEB's Friendship 2.0 survey in 2010, with a selection of participants of varying demographics to identify which social networking platforms are popular among South Africans and to further interrogate what exactly these users are doing on the various sites. The MWEB survey made use of 401 respondents who were interviewed on TNS Research Surveys' online panel. The respondents used for this particular survey were aged 16 years or older and the data is representative of the South African online population in terms of age, race and gender. The data represented in this study was also weighed to bring age, race and gender into line with AMPS figures.

**Limitations of the methodology:**

The research for this paper was limited to one-hundred South African online users; therefore the findings of this study should be generalised with caution. It is acknowledged that a research sample of one-hundred respondents does not necessarily reflect the general trends of the entire South African online population. Therefore it is likely that the respondents interviewed, individual online user behaviour and media consumption patterns, may differ from the rest of the South African population with regard to Internet user adoption, use of social networking tools found on the Web as well as varying levels of access to the Internet in terms of accessibility.

## Chapter 1:

### The evolution of the Web: - *The evolution to a third generation of the Web*

Internet and media professionals opined ten years ago that the model for the Internet was that it was going to be like T.V. – only better (Sorrel 1998). It turns out that that definition completely underestimated the power of the Net and the effect it would have on the world's population. The Web at its current growth rate and development stands to be the greatest machine ever built in the history of humanity. This machine also happens to be the most reliable machine human beings have ever constructed. It has never crashed before and has always run un-interrupted. Consider the usage of this machine too. There are over one hundred billion clicks per day on the Web. Fifty-five trillion links between all Web pages in the world and over two million e-mails are sent per-second from all around the world. The Internet also accounts for five percent of all electricity used on the planet to keep it running continuously.[1]

An approximation of the Web in terms of size and complexity resembles the way a human brain would function (Kelly 2007). The Web however is continuing to grow in size and complexity every two years. The Web is also enabling communication to grow from a world dominated by mass media and mass audiences in the past, to one ruled by collaborative media offerings and media participation generated and remixed by consumers who have been empowered to contribute to what they consume online. The Internet has, in a short period of time, undergone a rapid transformation. At present, the amount of Internet users around the world has grown to 1.6 billion people, or approximately 23.8 percent of the world's population, this in comparison to the 16 million online users in 1995, roughly then only 0.4 percent of the world population. The exponential growth of the Internet from 2004 to 2008 has been documented at an estimated 342.2 percent each year (www.internetworldstats.com).

The first version of the Web that was developed along with the introduction of the Internet as the first truly global network was referred to as Web 1.0. The transportation of data and data based applications was at the core of the methodology of this version of the Web. Hypertext Markup

[1] All stats and information referenced from online article: Kelly, K. We are the Web (2008). Wired online. [Internet]. Available from: http://www.wired.com/wired/archive//13.08/tech_pr.html

Language (HTML) was used as the building blocks for the development of Web pages online. Together with Extensible Markup Language (XML), which was designed to transport and store data online, laid the foundation for the sharing of a wide variety of data via the Web (Pattal & Yuan et al 2009).

Web 2.0, a term coined by Tim O' Reilly, a new media entrepreneur and theorist, is the second and current phase of the Web's evolution which has given the ability for software developers and online users to be able to create and share content online (O'Reilly 2001). Web 2.0 is also referred to by numerous names including, the wisdom web, people centric web, the participatory web as well as the read/write web (Murugesan 2007). Content creation and sharing is at the core of Web 2.0. The Web in terms of its genealogy is still in the Web 2.0 phase, however the next predicted phase of the Web, referred to as Web 3.0 or the Semantic Web is already being discussed by Internet scholars and technology/media theorists (Murugesan, Pattal & Yuan et al, 2009). There are a number of varying theories regarding what exactly Web 3.0 will entail among both media and technology experts. Some think it's about recommendations and others believe it's about adding context to the notion of personalisation (Catone 2008). According to Gary Stewart a lecturer at the University of Cape Town's Department of Computer Science, "Web 2.0 provides tools which are powerful but where meaning still has to be largely discerned by its developers and users. In the case of Web 3.0, the Semantic Web applications will infer meaning automatically and offer insights or information which otherwise would not have been apparent" (Stewart 2010).



1.1 The Web in its current version:

The scope of the Web today is difficult to fathom. The total number of web pages, including those that are dynamically created upon request and documented files, which are available through links, exceeds six hundred billion pages. Today, at any Web enabled terminal, users are able to have access to a plethora of music and video, an ever evolving user generated encyclopaedia in the form of Wikipedia, up-to-the-minute weather forecasts, a variety of online advertisements, satellite images of any place on Earth, up-to-the-minute news from all around the globe as it unfolds, road maps with driving directions attached, pictures of just about anything that can be photographed, places to buy almost anything your heart desires, instant

access to public records, library catalogues, archives to major newspapers – all wrapped up in an interactive index that works. The success of the Web at this scale was once thought impossible. Our traditional communication infrastructure has only begun to take its first steps in the shift from audience to participants. With the steady advance of new ways to create, communicate and share information, Web 2.0 has firmly entrenched the way users make use of the Internet. The Web has begun to embed itself into every class, occupation and region around the globe. Online culture is now truly "the culture" of the connected world.

At the rate at which the Web is evolving, it is projected that by the year 2040, the Web will be able to store more knowledge and information and be able to operate at a higher level of cognisance than the whole of humanity combined (Kelly 2010). The evolution to the Semantic Web will enable devices such as PCs, private hand-held devices or any other Internet enabled terminal which will serve as portals or private windows into Web, to organise and give well-defined meaning to the vast amount of information found on the Web and allow machine reasoning which is able to access the information found online to be ubiquitous and devastatingly powerful. Web 3.0 can tentatively be described as the Web of Openness. This refers to a Web that has the ability to break down old silos, link everyone everywhere together and make the entire Internet potentially smarter (Kelly 2007). However, this utopian vision of the Web is not a unanimous one. According to Stewart, there are a few challenges with the vision of the type of Semantic Web that Kelly outlines above. Stewart explains that the Web is fairly distributed and doesn't behave entirely as a uniform entity. It is essentially a distributed network of distributed data and information. According to Stewart, there may be agents or applications which may interpret that information and reach some measure of cognisance; however, the level of that cognisance is at this point in time only speculation (Stewart 2010).



1.2 Developing a language for the Web:

Ted Nelson, an early Internet visionary, wrote a paper in 1965 titled -Literary Machines- in which he argued that computers would enable consumers to have the ability to write and publish in a new non-linear format, through the concept of "hypertext" (Nelson 1965:43). Hypertext was made up of "non-sequential" text, in which a reader was not constrained to read in any particular order, but could follow links and have the freedom to delve into the original document from a

short quotation (Nelson 1965). Nelson described a futuristic project, referred to as "Xanadu", in which the entire world's information could be published in hypertext format. In Nelson's vision, every quotation would be linked back to its source, allowing for the original authors to be compensated by a very small amount each time the quotation was read or used by a user. Nelson's dream of this form of utopian society in which all information could be shared among people who would be able to communicate with each other as equals (Fischetti 2000).

Another early Internet pioneer, Professor Doug Engelbart a researcher at Stanford University, demonstrated a collaborative workspace called "On Line System" (OLS) which he developed in 1965. Engelbart's vision was for online users to be able to use hypertext as a tool for doing group work. In order for Engelbart to help himself manoeuvre his computer cursor across the screen and select the hypertext links with more ease of use, Engelbart developed a wooden block with sensors and a ball underneath it and called it a "mouse" (Engelbart 1965). Unfortunately for the early Internet pioneers like Nelson and Engelbart, their thinking proved to be too far ahead of their time. The personal computer revolution, which would make Engelbart's mouse invention as familiar as the pencil, would not become ubiquitous within society for another 15 years. When the computer revolution finally did take root within society, the idea of hypertext would manifest itself into the concept of software design (Fischetti 2000). This dovetailed perfectly with the next great development in the concept of global connectivity, which was the development of the Internet. Early functionality of the Internet were characterised by a general communications infrastructure that had the ability to link computers anywhere around the world together, on top of which the Web would sit (Berners-Lee 2000).

Before the development of the Internet, computers were connected by using dedicated cables from one computer to another. A software programme which was on one computer would be able to communicate over the cable that it was connected to by means of a software programme on another computer and would be able to send information such as a basic file or a programme from one machine to the other (Fischetti 2000). Although this was at the time an effective way to connect to other computers, this method of connectivity would be impossible to scale, as one computer would not be able to be linked to more than a few other machines, because it would need hundreds to thousands of cables running from it to other machines.

The solution to this challenge was to communicate indirectly over a network. The Internet provides that network of networks (Kelly 2007). At the essence of the Internet, is a set of standardised protocols, which are conventions by which computers send data to each other (Berners-Lee 2000). The data are transmitted over various carriers. These carriers include cable T.V. wires, satellite channels, telephone lines, and so on. The data can take the form of an e-mail, a software programme or even a sound and image. When a computer is ready to send its data, it uses special software to be able to break the data into "packets" that will be able to conform to two Internet protocols that govern how the packets of data will flow (Berners-Lee 2000). The two Internet protocols are referred to as Internet Protocol (IP) and Transmission Control Protocol (TCP). The software then labels each packet of data with a unique number attached to it. It then sends the packets out over the telephone or cable wires and the receiving computer uses its own Internet software to put them back together according to the labels which have been attached to the various packets of data.

In October 1990, Sir Tim Berners-Lee started to write code for the Web. His first major objective was to write the programme "Web Client"; the programme that would allow for the creation, browsing and editing of hypertext pages online (Fischetti 2000). The biggest challenge for Berners-Lee to achieve this, was to create an actual "hypertext window". This would require copious amounts of written code, but Berners-Lee still could not determine how he would be able to turn normal text into hypertext. The ability to achieve this would also require being able to distinguish text that was a link from text that was not a link (Berners-Lee 2000). Hypertext Transfer Protocol (HTTP) code was developed, which is the language computers would use to communicate over the Internet. Berners-Lee was also able to develop code called the Universal Resource Identifier (URI) which is the scheme for document addresses (Berners-Lee 2000). The outcome of these two sets of code, HTTP and URI had the ability to allow Berners-Lee to create the Web Client programme which consisted of a point and click browser and editor which he called the "World Wide Web".

By the beginning of 1991, it was working with a new piece of code that Berners-Lee had written, called the Hypertext Markup Language (HTML), which describes how to format pages containing hypertext links online (Fischetti 2000). The browser which was developed had the

ability to decode URI's and let the user read, write or have the ability to edit web pages in HTML format. It also allowed users to browse the Web using the HTTP code, although it only allowed users to save documents only into the local computer system, not over the Internet. An attractive incentive for users to put information and content on the Web was so that anyone else, anywhere in the world, could be able to find it and have access to it. Therefore Berners-Lee also developed the code that would develop the first ever web-server, which had the ability to hold Web pages on a portion of a computer and would allow other users to access them (Berners-Lee 2000).

The development of this level of functionality on the Web demonstrated the concept of the potential universal, all-encompassing space the Web would develop into. The browser was also programmed to have the capability to follow links not only to files on HTTP servers, but also to Internet news articles and newsgroups online (Fischetti 2000). This was not however transmitted in the Web's HTTP protocol, but in an Internet protocol referred to as File Transfer Protocol (FTP). This gave the Web the power to allow Internet newsgroups and accompanying articles to be available as hypertext pages. The result of this was that a huge amount of information that was already on the Internet was now available on the Web (Berners-Lee 2000).

Berners-Lee's dream of the universality of the Web was slowly coming to fruition. The key to this universality of the concept of the Web was driven by the idea that one information space could include all other information spaces which were available, which would lead to greater consistency of information (Fischetti 2000). Based on this vision of the Web, many technical issues about how the Web would function arose. These included; the need to encode the name and address of every information object in one URI string; the need to make all documents in some way "equal" was also essential; and the system could not constrain the user, which meant that a user should be able to link with equal ease to any document wherever it may happen to be stored (Berners-Lee 2000).

For the Web, the existence of the external link is what would allow the Web to have the power to become worldwide (Fischetti 2000). The most important design in the structure of the Web would be to ensure that when two groups had started to use the Web completely, independently

and at different institutions, a user in one group could create a link to a document, from the other with only a small incremental effort, and without having to have to merge the two documents databases or even have access to the other system (Berners-Lee 2000). If all the users on the Web could have the potential to do this, then the existence of a single hypertext link could lead to an enormous, unbounded world for society (Fischetti 2000).

1.3 Instituting protocols for the Web:

The incompatibility between computers had always been a stumbling block for the vision of a connected digital environment. The existence of the Web would signal the end of this. The defining moment in the creation of the Web was the development of a few basic common rules of protocol that would allow one computer to talk to another. For the Web, those elements were in descending order of importance; Universal Resource Identifiers (URI's); the Hypertext Transfer Protocol (HTTP); and the Hypertext Markup Language (HTML).

What was often difficult at first to grasp about the design of the Web was that there was nothing else beyond URI's, HTTP and HTML (Fischetti 2000). There was no central computer in place controlling the Web, no single network on which these protocols worked, and not even an organisation anywhere that ran the Web (Berners-Lee 2000). The idea of the Web was not a physical thing that existed within a certain place. It was in fact a space in which information of any kind could exist and flourish (Fischetti 2000).

The Web was likened to the concept of a "market economy" by its founder Sir Tim Berners-Lee. Within a market economy, anybody can have the power to trade with anybody and they don't necessarily have to go to the market square to do it. What they do need to do, however, are a few practices everyone has to agree with and to. These practices include variables such as the currency used for trade and the rules of fair trading. The equivalent of rules for the concept of fair trading on the Web, are the rules about what a URI means as an address online and the language the computers use which is HTTP (Fischetti 2000). When two separate computers agree they can talk or interact with one another, they then have to find a common way to represent their data so they can have the opportunity to share it with one another. If they attempt

to use the same software for documents or graphics, they can share that data directly. If not, then they can both translate the data to HTML (Berners-Lee 2000).

The overarching purpose of the design of the Web, according to Berners-Lee, was that once a user anywhere had made available a document, which could include graphics, sound, video content or standard document within an interactive dialogue, it should be accessible, subject to authorisation of course, by anyone and everyone with any type of computer (Berners-Lee 2000). It should also be possible then to link to that piece of content so that other users' online could find and access it. This proved to be the biggest philosophical change from the traditional approach to previous computer systems up to that point in time (Fischetti 2000).

People were used to the idea of having to go to find information, but they rarely had to make references to other computers. When they did have to start doing this, they typically had to quote a long and complex series of instructions to get to that reference (Fischetti 2000). In addition to this fact, for the use of global hypertext to become a reality, people had to move from a psychology of thinking about instructions to begin thinking in terms of a simple identifier string. This identifier string was the URI, which contained all these essential details in a compact way (Berners-Lee 2000). Getting people to put data on the Web initially was often a question of the online users' access to the Internet. The users had to then navigate through a set of virtual pages in some abstract space (Fischetti 2000). In this way, users could begin to "bookmark" any place and return to it whenever they wanted to and could make links into any place from another document. By having the power to be able to reference anything with such relative ease, the Web could also represent associations between things that might seem unrelated but for a set of hidden variables, did actually share a relationship.

If the Web was to achieve the vision of becoming truly universal however, it needed to be as un-constraining as possible (Fischetti 2000). Though the impact of HTTP was going to be faster, there would still be limitations to the overall structure of the Web. The key according to Berners-Lee to resolve this was the design of the URI (Berners-Lee 2000). This would prove to be the most fundamental innovation of the Web. Once a document had a URI, it could be posted on a server and in turn, be found by a Web browser. Hidden behind a highlighted word that denoted a

hypertext link, was the destination documents URI, which told the browser where to go and locate the document online (Berners-Lee 2000). A URI address has distinct parts, similar to a unique postal address. Slashes are used in a URI address to delineate it parts. The first few letters in the URI tells the browser which protocol to use to look-up the document being searched for, whether the HTTP, FTP or a small set of others (Berners-Lee 2000).

Berners-Lee had expected that all kinds of data formats would exist on the Web. Therefore he understood the importance of having one common basic "lingua franca" that any computer would be required to understand (Fischetti 2000). This would need to be a simple hypertext language that would be able to provide basic hypertext navigation, menus and simple documentation capabilities. The solution to this challenge was the development of HTML. Berners-Lee's expectation for HTML was to be the single common language that the Web would communicate in. HTML turned out to be a simple yet effective way to represent hypertext on the Web.

There were some basic design rules that guided HTML on the Web and some pragmatic choices as well. A philosophical rule was that HMTL should convey the structure of a hypertext document, but not go into details of its presentation (Fischetti 2000). There was also a family of Markup languages referred to as Standard Generalised Markup Language (SGML) already preferred by some of the world's documentation community and at the time was considered the only potential document standard among the hypertext community (Fischetti 2000). Berners-Lee's design and development of HTML was made to look like a member of the SGML family of languages.



## 1.4 What is Web 3.0?

Web 3.0 is the proposed third phase of the Web's evolution. In the case of Web 1.0, producers created content for online user's to use that content and have the ability to share it in a limited manner with others online. Web 2.0, the current version of the Web allows users to equally participate in the production of content creation and in sharing that content with a wider audience online(http://web2.wsj2.com/all_we_got_was_web_10_when_tim_bernerslee_actually_gave_us_w.htm). Web 3.0 has the potential to change the entire process by bringing machines closer to

users and producers which would result in more dynamic, interactive and efficient creation of content online and the management of that content (http://www.scribd.com/doc/2429697/Web-20-Web-30-The-Great-Comparison). Figure 1.1 below pictorially illustrates the current and proposed evolution of the Web as has been discussed above.

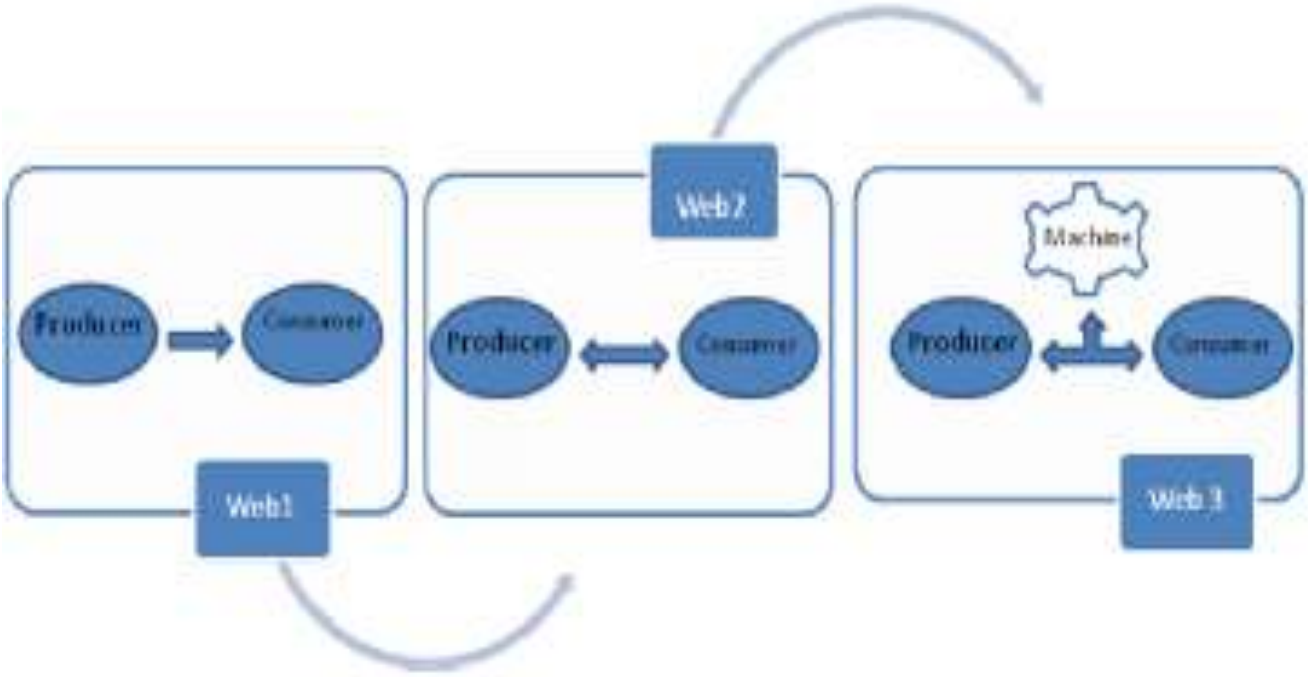


***Figure 1.1: The Proposed Web Evolution***

The major premise of Web 3.0 is based upon linking, integrating and analysing data from various data sources into new information streams (Pattal, Yuan, et al 2009). Even though academic researchers, media theorists, software developers and online users may have differentiating definitions of what Web 3.0 entails (Bratt 2008), one common definition that is shared by all stakeholders is that Web 3.0 will result in the personalisation of the Web. In other words, the Semantic Web will be about obtaining the information that a user wants, when they want it. However, according to Pattal, Yuan, et al, the standard definition of Web 3.0 has not yet emerged since Web 3.0 is mainly under development currently by the World Wide Web Consortium (W3C) and is yet to become a reality (Bratt 2008; Pattal, Yuan, et al 2009). The linking of data in Web 3.0 is achieved with the assistance of semantic technologies such as the Resource Distribution Framework (RDF) and SPARQL, which is a standardised query language for RDF data, which is currently in use to assist in the development of the Semantic Web (Pattal

& Yuan, et al 2009). The basic feature of a Semantic Web is to allow a person or a machine to begin with a single database and then have the ability to increase its access to infinity databases which are not connected by wires but on the basis of some common elements such as place, concept, age, and so on. (Greavs 2007).

The Semantic Web is a vision of having data on the Web defined and linked in such a way that it can be used by computers, not just for merely display purposes, but also for applications. Web 3.0 mainly will operate on RDF, which is a standard model for data interchange on the Web. RDF was designed to provide a common way to describe information found online so it can be read and understood by computer applications. RDF is written in XML so that it can be easily exchanged between different machines using different operating systems (http://www.w3schools.com/rdf/rdf_intro.asp). RDF also joins the structure of the Web with Uniform Resource Identifiers (URI's) which allows original data in each database to be able to form in an original form such as XML and Excel. (http://www.w3.org/2001/sw/)

The base of Web 3.0 applications exist in RDF for providing a way to link data, which has been created in the current Web 2.0 era, from multiple website or database sources. With SPARQL, a query language for RDF data, applications can access native graph based RDF stores and extract data from traditional databases (Hendler 2009). Web Ontology Language (OWL) is another language which can play a fundamental role in the applications and development of Web 3.0. OWL and RDF are very similar in theory to one another; however OWL is seen as a stronger language with greater machine interpretability than that of what RDF can offer (Pattal, Yuan, et al 2009). OWL is built on the top of RDF but comes with a larger vocabulary and stronger syntax then that of RDF. (http://www.w3schools.com/rdf/rdf_owl.asp)
Technology and the current data from Web 2.0 are the two main building blocks needed for the creation of the concept of a Semantic Web. By integrating these blocks, the vision of Web 3.0 will comprise of two platforms, namely, semantic technologies and a social computing environment. (Dexter 2007).

Semantic technologies have the open standards and can be applied on the top of the existing Web as figure 1.2 illustrates below.


***Figure 1.2: Semantic Technologies, Web 2.0 and Web 3.0***

The notion of a social computing environment means that Web 3.0 focuses on the "human-machine" relationship and desires to organise a large number of current social web communities. These semantic technologies have the potential to play an important role in the future evolution of Web 3.0 as well as stimulation towards creativity and innovation by minimising the distance between man and machine, discovering new business models by shortening the innovation cycle, movement towards true globalisation as well as from an online user perspective, merging the social web community information through the use of semantic web technology RDF. (Pattal, Yuan, et al 2009).

The key factor in determining the success of the Semantic Web is for information found on the Internet to be presented and labelled so it makes sense to machines. This means all Web content needs to be presented in a language that software can understand; by using programming language such as OWL and Semantic Web Rule Language (SWRL) that can be read by software. Both OWL and SWRL make up a family of knowledge representation languages for authoring ontologies and is endorsed by the World Wide Web Consortium (Berners-Lee 2000). Therefore the more Web content written in these languages, the more effective the software will be in gathering information and making recommendations for users online.

The Semantic Web will therefore be able to function efficiently by programming itself to search off "Meta-Data". Meta-data or meta-information is simply data about other data of any sort

found in the media. In relation to web pages, the Hyper Text Mark-up Language (HTML), which is used to mark-up web pages, allows for the inclusion of a variety of types of meta-data, from simple descriptive text, dates and keywords to highly granular information. Web pages can therefore be tagged with co-ordinates and found through various search engines online. Meta-data may be included in the web page's header or in a separate file. Micro-formats allow on-page data to be marked-up as meta-data. The Hypertext Transfer Protocol (HTP) used to link web pages to each other also includes meta-data.

1.5 The evolution of the Web:

In terms of the genealogy of the Web, we are currently in the Web 2.0 era, however, according to computer science academics and commercial programmers; "a thin red line" exists between Web 2.0 and the evolution to the concept of a Web 3.0 (Pattal, Yuan, et al 2009). The main purpose of the evolution of the Web to the concept of Web 3.0 is to fix and improve the constraints of that Web 2.0 currently experiences, rather than to replace it completely (Lassila & Hendler 2007).

The principle behind the evolution of the Web from Web 1.0 to Web 2.0 is the notion of the promotion of information sharing and content creation, either by producers or by online users. Web 3.0 is premised towards linking sets of data created in different languages and at different places on the Internet. In the current version of the Web, a large number of social webs, blogs and databases, such as Wikipedia and "video on demand" sites like YouTube, have emerged. The concept of Web 3.0 attempts to focus on the integration of these datasets that have been created in the current Web 2.0 era (Pattal, Yuan, et al 2009).

The use of various technologies has created another important difference between Web 2.0 and the potential of a Web 3.0. There are three distinct development approaches which have been used to create interactive, expressive and scalable applications in Web 2.0. These are namely; asynchronous Java script and XML (AJAX), Adobe Flex and Google Web Toolkit (Murugesan 2007). AJAX, which is coding suggested by Google, is a widely used programming language in many of the Web 2.0 applications currently used on the Internet. Flex, based upon Flash, provides a fine-grained control over an application's look and feel (http://www.adobe.com/products/flex). Google Web Toolkit is an open source Java development

framework that makes it easy to develop and debug AJAX applications (http://code.google.com/webtoolkit/). Although all the above mentioned approaches encourage optimal, faster and more interactive Web applications, the information interchange among databases in Web 2.0 limits the interoperability, which is also referred to as "walled-gardens" (Palfrey & Gasser, 2007). A walled garden refers to a closed or exclusive set of information services provided for users. This is in contrast to giving consumers open access to applications and content. The development of Web 3.0 will potentially come up with a solution to the walled-garden effect, by having the ability to bring machines closer to humans, through allowing RDF to be adopted which will develop a programming language from XML to be able to read and understood. Through making use of this approach, the concept of Web 3.0 will be able to arrange the metadata which has been created in Web 2.0, in terms of relationship between data resources with data properties and exploits it more efficiently, to the users and producers of the Web 3.0 applications (Pattal, Yuan, et al 2009).

All current websites which are good representatives of Web 2.0 are big search engines, using AJAX programming language. In basic terms, the potential of Web 3.0 will have the ability to make Web 2.0 uniform, ubiquitous and potentially more efficient, in terms of user experience and usage with an additional benefit of new standards of programming language. The distinctions between Web 1.0, Web 2.0 and the notion of Web 3.0 can be best illustrated in figure 1.3 below. As the figure below illustrates, a Web 3.0 version of the Internet has the potential to provide the Web as well as users whom make use of it, with a more advanced user experience in comparison with the current version of Web 2.0 programming. For example, the ability to make use of 3D software and programming which will undoubtedly improve the online users overall experience with Web 3.0 programmes.

| Web 1.0 | Web 2.0 | We b3.0 |
|---|---|---|
| FrontPage | MySpace | SIOC-project.org |
| Encarta | Wikipedia | Dbpedia |
| Streetmap/MapQuest | Google earth | 3-D Street View |
| PC games | Online games | Online 3D-games |
| Home video | YouTube | Yet to come |
| Mp3.com | iTunes | Yet to come |
| Microsoft Office | Google Docs | Yet to come |

***Figure 1.3: Distinctive Web Applications***



1.6 The impact of the Web on society:

Do the future capabilities of the Web have the power to change the method of the way people work together to advance knowledge? In just over eighteen years, society has come to realise that the Web lets its users' do and achieve things faster, but can it have the ultimate power to change the way society works altogether? Whether society can advance in the future will be determined in no small part by their ability to create the right connectivity between people (Fischetti 2000). In many instances, this has always been out of people's capabilities, as geography has always decided this. The diversity of the various cultures in society has also traditionally stemmed from two-dimensional spaces (Fischetti 2000). People did not have to be put in the position to decide how large their reference groups would be or where to draw boundaries.

In today's hyper connected world, the metric is no longer physical space that limits society, but clicks. The advent and continuous evolution of the Internet and the Web have had the profound effect of pulling society out of two-dimensional space. The Web has broken boundaries that society has relied on to define who they were and to protect them (Fischetti 2000). It is important that the Web help people and society be intuitive as well as analytical in their thinking and interactions, because today's society that exists in the twenty-first century will need both

functions. According to Mark Fischetti, human beings have a natural balance in using the creative and analytical parts of their brains. Fischetti believes that in the future, human beings will be able to solve large analytical problems by turning computer power loose through the power of the Semantic Web (Fischetti 2000).

What kind of structures need to be put in place to see this vision of the Web come to fruition? The Web as a medium is so flexible that it leaves the choice to society (Berners-Lee 2000). According to Berners-Lee, as well as the choices of links we make individually, users also have a choice in the social machines that are created for the Web. Similarly, the Web needs to be decentralised in nature, resilient and fair. The human brain has the power to outperform computers through its level of parallel processing (Fischetti 2000). Society, similarly, is able to solve its problems in parallel too. For society to gain the full potential and to work efficiently on the Web, large degrees of parallelism will be required.

The Internet thrives on a decentralised technical architecture as well as a decentralised social architecture. These were incrementally created by the design of technical and social machinery. The Internet itself seemed to represent a movement away from hierarchy. Without hierarchy, there were too many degrees of separation (Fischetti 2000). Link-by-link, users continue to build understanding across the Web. Links are seen as the threads that hold the Web together.



1.7 A new kind of mind:

According to Kevin Kelly, "it is hard to imagine anything that would 'change everything' as much as a cheap, powerful, ubiquitous Artificial Intelligence, the kind of synthetic mind that learns and improves itself. A very small amount of real intelligence embedded into an existing process would boost its effectiveness to another level" (Kelly 2008:14). As the power of the Internet increases and the success of online search algorithms like Google amass exponential power and capabilities, Kelly theorises that the vision of Artificial Intelligence (AI) will not be bounded inside a definable device. It will be on the Web, like the Web (Kelly 2008). As more people gain access and use the Web around the world, the more the Web grows and learns. The more the Web knows, the more users will make use of it. The smarter the Web gets, the more money it will make, the smarter it will get the more users will use it (Kelly 2008). The

"smartness" of the Web, according to Kelly, is on an increasing-returns curve, self-accelerating each time someone clicks on a link or creates a link of their own. As more commercial life, scientific work, and daily play of humanity moves onto the Web, the potential and benefits of a Web based AI become less science-fiction and more of a real-life possibility. The first genuine AI will most likely not be a stand-alone "super-computer", but would comprise a billion computers which form the basis of the Web (Kelly 2008). It will be planetary in dimensions, but thin, embedded, and loosely connected, and any device that touched this Web AI will have the power to share and contribute to its intelligence. Therefore all devices and processes will need to participate in this Web of intelligence, which will also be referred to as the Semantic Web (Kelly 2008).

1.8 The impact of the Web on human cognition:

If alphabetic literacy can change the way the human mind thinks, imagine how the Web and Internet literacy in combination with ten hours per day in front of some form of screen is potentially changing the way human minds function (Kelly 2009). The first generation to grow up "screen literate" is just in the process of reaching adulthood. The "Net Generation" is a termed first coined by Dan Tapscott in his book - Grown Up Digital: How the Net Generation is changing the world - (Tapscott 2008). Tapscott refers to the Net Generation as the first generation in the history of mankind to have grown-up surrounded by digital media and technology. Tapscott goes on to write that for the first time this generation is more comfortable, knowledgeable and literate than previous generations with innovation and a culture of consistently wanting to improve themselves and their experiences a central theme to this new society (Tapscott 2008).

Already this Net Generation which are classified by consumers who are in-between the ages of 11-30 years old are playing, learning communicating, working and creating communities very differently than previous generations have (Tapscott 2008). Around the world, the Net Generation or Generation Y as they are also known, are flooding into the workplace, marketplace and every niche of society. This new generation are bringing their demographic muscle, media savvy, purchasing power and new models of collaborating with one another into the world, and the Internet is the catalyst for all of this to help take place. It must be highlighted however, that

that the group of online users that Tapscott refers to here, come from more developed world environments where access to information as well as unlimited access to the Internet is available to them at a more regular basis than it would be for someone who comes from a developing world country (a more accurate online user profile of consumers who make use of the Internet in a developing world environment such as South Africa is explained in detail in chapter six of this thesis). This is an important distinction to make as the "Net Geners" reflexes are tuned to speed and freedom. This generation prize freedom and freedom of choice above everything else. They want to customise things and make it their own. They are natural collaborators who enjoy dialogue not monologue. Speed is normal and expected to them with constant innovation being part of their lives.

However, the knowledge that the Net Geners and any other online users are able to gain from the Web is more fragile than from other traditional knowledge and information sources. According to Kevin Kelly, for every accepted piece of knowledge a user finds online, there is within relatively easy reach, someone who challenges that fact or piece of information. Every fact online has an anti-fact to contradict that piece of information (Kelly 2009). The way the Internet functions, through the linking to information from various sources, this hyper-linking has the ability to highlight anti-facts as regularly and convincingly as facts online (Kelly 2009). The nature of the majority of these challenging anti-facts are questionable, but in certain instances some of them may be borderline and in certain instances, valid.

Online users can also not entirely rely on experts or authorative figures to sort the contradiction of information sources that are available on the Web due to the fact that for every expert that supports one opinion or theory on a subject or field of expertise, exists an equal and countervailing anti-expert. According to Kelly, therefore anything that online users learn or are exposed to on the Web in terms of information and content is subject to erosion by these ubiquitous anti-factors (Kelly 2009). This aspect of the Web breeds uncertainty for online users as they do not really know for sure which source of piece of content to truly believe or disregard. According to Kelly, the presence of this uncertainty in the mind of the online user is a kind of "liquidity" (Kelly 2009:7). Kelly theorises that online users' thinking has become more "liquid" and less "fixed", as a textbook might be. Due to this liquidity in thinking, users opinions shift

more and their interests rise and fall more quickly. They are less interested in one "rigid truth", but more interested in truths plural (Kelly 2009). The presence of the subjective has an important role to play in assembling the objective from many data points for the online user (Kelly 2009).

In an article titled - Is Google Making Us Stupid? - Nicholas Carr makes the argument that the Internet has, over the years, lead to online users' concentration spans diminishing, which is slowly leading to a new way of thinking when it comes to consuming information and content found online. Carr speaks of his own personal experience in terms of how he consumes content in the new digital age:

> Over the past few years I've had an uncomfortable sense that someone, or something, has been tinkering with my brain, remapping the neural circuitry, reprogramming the memory. My mind isn't going – so far as I can tell – but it's changing. I'm not thinking the way I used to think. I can feel it most strongly when I'm reading. Immersing myself in a book or a lengthy article used to be easy. My mind would get caught up in the narrative or the turns of the argument, and I'd spend hours strolling through long stretches of prose. That's rarely the case anymore. Now my concentration often starts to drift after two or three pages. I get fidgety, lose the thread, begin looking for something else to do. I feel as if I'm always dragging my wayward brain back to the text. The deep reading that used to come naturally has become a struggle. (Carr 2008:3).

Carr attributes this loss of attention and concentration to the increasing amount of time he and others are spending online, searching, surfing and on occasion adding to the vast databases of information and content found on the Web. According to Carr, the Web is developing into a universal medium, "the conduit for most of the information that flows through my eyes and ears and into my mind" (Carr 2008: 3). The online user's distinct benefit of having instant access to enormous amounts of information at the mere click of a mouse is capacious. Marshall McLuhan opined in the 1960's that media are not just passive channels of information. They supply the stuff of thought, but they also shape the process of thought (McLuhan 1965). According to Carr, what the Web is currently doing is "chipping away the user's capacity for concentration and contemplation. The mind now expects to take information the way the Web distributes it: in a swiftly moving stream of particles" (Carr 2008: 4).

Conversely, Kevin Kelly maintains that claims that the Internet and the Web diminish online users' attention spans, is overrated. Kelly argues that smaller bits of information can quite

capably command the full attention spans of the human mind (Kelly 2009). The culture of the Internet according to Kelly is to "unbundle" larger works into smaller more minor snippets. For example, the music industry and their full length albums have been unbundled and sold as single songs; newspaper articles have become Twitter posts; and even detailed academic research and studies have been unbundled and served to online users as snippets of information through search engines algorithms such as Google (Kelly 2009). This has led to a process of more active cognition on the part of the online users as opposed to traditional contemplative thinking. According to Kelly, online users when interacting with content and information on the Web go looking, searching, asking, questioning and reacting to data. Online users react to data, information and ideas first instead of passively consuming and just thinking about it that piece of information or content. Cognitive theorists have long been interested in the role of tools in the development of mental processes (Bruner & Olson, 1977; Luria, 1976; Vygotsky, 1978). Tools, broadly conceptualised as cultural artefacts, include both physical objects (e.g., printing press, abacus, telephone and computer) and socio-cognitive constructs such as symbols, systems, and language (Nickerson, 2005). Tools are not just added to human activity; they transform it (Tikhomirov 1974). Intense and prolonged engagement in the transformed activity, over time, transforms human cognition (Maynard, Subrahmanyam, & Greenfield, 2005). Bruner (2005) maintained that individual minds appropriate ways of representing the world from using and relating to the codes or rules of available technology (Bruner 2005). The Internet is rapidly transforming a range of human activities including education (Jones & Madden, 2002), communication (Nie, Simpser, Stepanikova, & Zheng, 2005), commerce (Fox, 2002), and recreation (Farley-Gillispie & Gackenbach, 2006).

From a cognitive perspective, the Internet differs from others forms of media, although there is overlap in cognitive requirements. For example, like Internet use, computer use is interactive, with primarily visual-cognitive input, such as viewing a screen, and most commonly manual output, for example, manipulation of peripheral devices such as a keyboard and mouse. Unlike Internet use, however, computer use is limited to available software and does not connect users for purposes of communication. While research suggests that computer use has changed the balance of cognitive skills from the verbal to the visual, the cognitive skills required when using the Internet are more complex than those associated with computer use. (Subrahmanyam, K.,

Kraut, R., Greenfield, P., & Gross, E. 2001). In addition, Tarpley (2001) noted that the Internet is not like books or television in the sense that it is used primarily for communication, information gathering, and games rather than for passively experiencing narrative stories (Tarpley 2001).

Across all populations and age groups, online communication is the most common use of the Internet (Tarpley 2001). Currently, Internet communication typically involves reading and typing text in real-time, such as chat and instant messaging or delayed-time for example, e-mail and message boards. In this regard, a range of cognitive skills are required to communicate online (Crystal, 2001). Following communication, accessing information via websites is reportedly the second most common online activity (Nie et al., 2005). Typically, websites contain text and images that require interpretation. Although there are differences in the reading processes involved in decoding printed text and digital text, there are also many similarities, with meaning-making being central to the process (Marsh & Thompson, 2001). Electronic texts are malleable and fluid; they are not firm and fixed in the manner of printed books and magazines (Desmond, 2001). Tarpley (2001) suggested that accessing websites requires meta-cognitive processes such as planning, search strategies, and evaluation of information. According to early childhood educators, visiting websites supports emergent literacy, builds problem solving skills, and facilitates concept development (Parette, Hourcade, & Heiple, 2000).

As the Internet and Web evolves, the effects on human cognition are indubitable. Alan Turing, a British mathematician published a research paper in 1936 titled - On Computable Numbers - which proved that a digital computer, which at the time of his study, existed only as a theoretical machine, could be programmed to perform the function of any other information-processing device (Turing 1936). Based on Turing's theory, Carr opines that this is exactly what is happening currently in society today as the Internet continues to evolve (Carr 2008). According to Carr, the Internet and Web is an immeasurably powerful computing system and is in the process of slowly subsuming most of the world's other intellectual technologies. For example, the Web is becoming online consumers map to destinations, clock, printing press through blogging and user-generated content, calculator, telephone via websites such as Skype, radio and T.V. When the Web absorbs a medium, that medium is re-created in the Web's image. The result

of this digital phenomenon is to scatter online users' attention and to diffuse their concentration (Carr 2008). The prospect of the Web having the impact to diffuse online users' concentration has led to the theory of "Continuous Partial Attention" which is a termed that was first coined by Linda Stone, a Microsoft executive in 1998. Continuous Partial Attention refers to a state in which most of an online user's attention is on a primary task, but where the online user is also monitoring several background tasks just in case something more interesting or important comes up (Stone 1998).

The Internet within a relatively short period of time has become one of the most ubiquitous and popular mediums known to humanity. Within a period of less than twenty years, the Web has evolved into two versions and is potentially on the cusp of evolving into a third generation, namely Web 3.0 or the Semantic Web. In the process of weaving the current version of the Web which users have come to know today, the development and implementation of a set of protocols, language and code - which the Internet is able to read and function off - has played a fundamental role in making the Web what it is. In order for the potential further development and evolution of the current version of the Web, a new set of standardised Web ontologies will need to be developed in order to provide a common way to describe information found online in order for it to be read and understood by computer applications. Over a period of time, the way users have interacted with the Internet and the various Web applications found online has also begun to change the way online users cognitively think and interact with information found online. This subsequent evolution in the way human beings now cognitively consume and interact with information and data found on the Internet will also potentially prepare online users for the next change to the way the Web functions in the coming years. In its current form, Web 2.0 – the current version of the Web – provides powerful tools for users to make use of. However Web 2.0's major limitation is the fact that the concept of "meaning" is still largely discerned by its developers and the users themselves. What a potential Web 3.0 offering can provide are Semantic Web applications which will have the ability to infer meaning automatically as well as offer insights and information to the user which otherwise would not have been apparent within a Web 2.0 architecture.

## Chapter 2:

## The political economy of media and communications: - "*new" media and the structure of power*

Traditionally, there has been a tendentious frequency in the studies of "new" media to emphasise the abundance and variety of new media products and services, and to focus on the promotion of access with little attention given to the associated structures and various processes of power that are entrenched within them (Mansell 2004). Significant changes do exist in the scope and scale of new media supply, as well in the manner in which new media has mediated the lives of its user's through various forms of digital technologies and services. There is also parallel to this fact, current evidence of scarcity in relation to new media production and consumption. The condition of scarcity - within the context of access to information and technology - is currently being reproduced as a result of various articulations of power, which continues to have a major impact on media and communications around the world (Mansell 2004). The result of this issue of scarcity continues to promulgate in the maintenance of deeply-rooted inequalities within the current information or knowledge societies (Mansell 1999, 2003, 2004). The concept of political economy has significantly contributed to media research by attempting to uncover and investigate how social processes and the presence of institutional pressures have had the ability to operate and contribute to making the communication process accessible and economically tradable for larger audiences in society. The study of the political economy of media and more imparticular, present new media and communications, provides useful value and insight to critical media studies due to the fact that it has the ability to reveal social values and uncover and expose regimes of control that exist beyond citizens apparent autonomy in the process of interacting with the material and symbolic aspects of the new media (Pereira 2009).

The political economy approach to critical media studies can be associated with a plethora of theoretical viewpoints. Vincent Mosco has attempted to define what the concept of the political economy of communication entails. In Mosco's approach to defining the concept he seeks to examine the "central qualities that characterise the approach" (Macek & Cloud, 2006: 87-110). Central to this quality that Mosco refers to is the attempt to understand the social change and historical transformation as well as having an interest in examining the social whole and totality

of social relations that make up the economic, political, social and cultural areas of life, and identifies commodification and hegemony as the basis for the notion of a political economy (Mosco 2004). Mosco's notion of commodification identifies praxis as the central concern, suggesting that, in its past treatments of commodification "political economy has tended to concentrate more on media content and less so on media structures and the labour involved in media production" (Macek & Cloud, 2006: 97). Here Mosco identifies contemporary media scholarly research which has attempted to expand the canon on the meaning of the political economy of media and communication which has broadened the analysis and understanding of the complex relationship of audiences to the producers of commercial culture which includes the Internet (Macek & Cloud, 2006: 97-98). The concept of hegemony according to Mosco also plays an important role in the scholarship in defining the notion of the political economy of media and communications. He describes hegemony as "a lived network of mutually constituting meanings and values, which, as they are experienced as practices, appear to be mutually confirming" (Macek & Cloud, 2006: 103). Past academic scholars have also provided definitions of what the political economy of media and communications can trace its origins from. Herbert Schiller and Dallas Smythe, two of the most prominent political economists of communication over the last three decades provided the following definitions. Schiller's approach assumed a structuralism that links clearly and concisely with the goals of political action. Schiller analysed large corporations, and emphasised the reality of "cultural industries" (Schiller 1989). The concept of cultural industries, as defined by Schiller, are publishing, press, film, radio, television, photography, recording, advertising, sports, and the "information industry" (Schiller. H, 1989: 30). Schiller continues by describing a subset or "second tier" to the cultural industry:

> These [second tier] activities also provide symbolic goods and services...[and] are displayed in relatively permanent installations, instead of being produced serially. Using this measure, museums, art galleries, amusement parks, shopping malls, and corporate 'public spaces' also function as cultural industries (Schiller. H, 1989: 30-31).

Other institutions also contributed to Schiller's framing and analysis. The agreements and collusion between various governments and large, mass media organisations, such as consumer goods producers and the changes in technology as they adjusted the various control mechanisms of these specific institutions (Schiller 1976). Crucial to Dallas Smythe's definition of the political

economy of media and communications was a sense of how commodification operated within the media and markets and the subsequent construction of the audience as forms of commodities (Smyth, 1978: 1-27). In relation to how praxis operates on the production side of media, Smythe goes further in his analysis by not only looking at regulations, but also at organisations and other larger corporate structures. He describes how media and communication producers came to understand and act towards their various audiences in specific ways, given the particular arrangements of corporate activity, and the over-arching demands of the capitalist marketplace (Smythe 1978; Park 2009). Nicholas Garnham, another influential academic scholar in the field of the political economy of media and communications focused on both the structure of production of services and technologies and on the consumption of their symbolic content (Garnham 1990, 2000). Garnham's specific interest in the "old" and "new" media has focused specifically on the development of explanations for emerging social structures, hierarchies of power and their legitimisation (Garnham 2004).

Based on the above definitions of the political economy of media and communications, both past (Schiller & Smythe) and more contemporary understandings of the concept (Mosco & Garnham), any contemporary definition of the political economy of media and communication must theoretically be equally concerned with symbolic form, meaning and action as it is with structures of power and institutions. If resources are scarce and if power is unequally distributed within society, then the key issue must be focused on how these scarce resources are allocated and controlled, as well as with what consequences it will have on human action (Mansell 2004). The major distinction between old and new media relates to the reasons why the concept of scarcity conditions emerges and the degree to which these conditions contribute to the reproduction of unequal social conditions. According to Mansell, the production and consumption of new media in their commodity form refers to the fact that scarcity has to be created by, for example, the use of concepts such as copyright, controlling access, promotion of obsolescence, the creation and sale of audiences and by the favouring of certain types of new media forms over others (Mansell 2004). In relation to the Internet, this is achieved through the means of implementing the "walling off" of electronic spaces through the introduction of payment systems or "pay walls" and the bundling together of services which online consumers need to pay for to have full access to.

The basis and strength of making use of the concept of the political economy approach to studying media and communications are determined on four specific variables (Garnham 1986; Mansell 2004; Meehan et al 1993; Mosco 1999, 2004). Firstly, it is an important first step in analysing the structural circumstances in the production and consumption of symbolic content and their material means of distribution; secondly, it moves beyond the economic issue of efficiency to cope with the relativism inherent in the questions pertaining to value and power; thirdly, it exposes a commitment towards practice by coming out with a historically positioned understanding of the broader context; and finally, it is committed to revealing political and economic dynamics which exist beyond the public and private domains. (Pereira, 2009: 326).



2.1 The weaknesses of political economy in studying "new" media:

The subsequent weaknesses in adopting the political economy approach to media and communications are fundamentally due to how it frames the concept of the relations of value and power within an environment of blurred boundaries which exist between the creation and use of specific media goods and content (Pereira 2009). The emphasis on the existence of a domineering ideology within the media industry, has led to a social subordination and cultural influence over audience and consumer beliefs (Garnham 1986). According to Pereira, the presence of this ideology is limited by three key assumptions. They include; ideology is regarded as embedded into a process of rationalisation and control over production, distribution and consumption; it draws attention towards the concept of "centralised nodes" of authority held through historical processes of enforcement and acceptance; culture is reduced to economic accounts of reality (Couldry 2000; Hall 1997; Thompson 1990). However, based on these points mentioned above, these limitations end up failing to fully grasp the interplay of multiple ideologies as new media producers and consumers continuously interchange roles (Pereira 2009).

2.2 A pluralistic analysis of the political economy of "new" media:

A pluralistic view of the political economy of new media should seek to develop an understanding of the way in which power is structured and differentiated, understanding where it comes from and how it can be renewed (Garnham 2000). According to Mansell, this suggests examining new media to show how the structuring of global networks and digital information flows and their consumption which is informed by predominant and alternative principles, values

and power relations (Mansell 2004). Conversely, however, the idea of existing power distributions is taken as mandatory. In contrast, the study and understanding of the political economy of media insists on the close scrutiny of the circumstances that have given rise to any existing distribution of power and of the subsequent consequences for consumers as well as citizens (Mansell et al., 2002; Melody 1994). A rejuvenated and contemporary concept of the political economy of new media and communication also requires to take into account elements of research that are undertaken largely outside of the conventional limitations of the media and communications discipline (Mansell 2004). During the process of the shift from mass media to a concept of new media, the replication between centre-versus-periphery binaries are currently taking place. Within a South African media context, large media organisations such as NASPERS, and other larger, international media companies such as Independent and FOX Media as well as other media monopolies around the world, have been able to facilitate the transition to newer media forms and technologies thereby having the power and ability to maintain and to an extent extend their hegemony within the media landscape.

The concept of the network society as proposed by Castells, refers to a social structure which has been constructed around, but not necessarily determined by, the digital networks of communication (Castells 2008). The term network society refers to a society in which the social structure of society is made up and around the existence of networks which are activated by micro-electronics based, digitally processed information and communication technologies (Castells 2008). The concept of "digital networks" according to Castells are global in nature, due to the fact that they have the ability to re-configure themselves as directed by their programmers, which transcends territorial and institutional boundaries through telecommunicated computer networks (Castells 2008). Therefore Castells theorises that a social structure whose infrastructure is based on the concept and architecture of digital networks has the potential to be global in scale. However, this does not necessarily mean that people everywhere are able to be included in these networks. Castells further argues that the process of formation and exercise of power relationships has been transformed in the new organisational and technological context derived from the rise of global digital networks of communication as the fundamental symbol-processing system of the twenty first century. Based on Castells theory therefore, the study and analysis of power relationships as described by Mansell et al, is necessary to require an understanding of the

specificity of the forms and processes of socialised communication within the concept of the network society (Castells 2008). Castells attempts to make the connection between the multiple new technologies and networks which enable a vastly different mode of communication.

2.3 The role of technological innovation and evolution and the political economy of "new" media:

Essential to the overall understanding of the political economy of new media is the role that social values and regimes of control play in becoming entrenched in the new media and what those consequences may be on society (Mansell 2004). Castells defines the concept of "power" as the relational capacity which enables a social actor to have the potential to influence asymmetrically the decisions of other social actor(s) in a way that favours the empowered actor's will, interests and values (Castells 2008). Castells argues that the concept of power is the most fundamental process in society due to the fact that society itself is defined by values and institutions, and that what is valued and institutionalised is defined by power relationships. Castells observes how the concept of value is in fact an expression of power and that whoever holds the power has the ability to decide and determine what is in fact valuable within any society (Castells 2008). The analysis and understanding of the innovation and technical change, specifically within new media, provides an additional resource and point of departure to the understanding of the political economy of media and communications within a contemporary analysis. Academics are beginning to base their analysis and study of the information and communication technology (ICT) paradigm on an understanding based on the cause and consequences of technological change and innovation which is taking place constantly within the new media environment (Freeman & Louca 2001). Freeman and Louca argue that when certain enabling technologies and innovations emerge, their widespread appropriation begins to challenge the established hegemony of earlier modes of social as well as economic control (Freeman & Louca 2001).

Within the field of Internet studies, assertions are made that assume that the construction and subsequent use of the Internet involves, without question, a significant change in economic and social relationships (Mansell 2004). The Internet is commonly defined as a postmodern, cosmopolitan, ironic, hybrid and as a technologically-enabled medium (Van Couvering 2003).

The Internet has also been described as a new public space of possibility for individual users as well as communities, in addition to being recognised as a commercial space for advertising and new media businesses. It is alternatively revolutionary or evolutionary (Mansell 2004). According to Castells, it is also conceived as a medium that is being socially constructed as a medium where the technology architecture itself favours certain social outcomes (Castells 2001). Mansell describes that what the Internet means – and for whom it has meaning – is debated in a manner that is detached from the way in which power is embedded in, and experienced through, the new media (Mansell, 2004: 100).

Internet scholar Jonathan Zittrain has questioned the future ability of the Internet to remain "open" in the face of growing security threats online. According to Zittrain, the key to understanding the Internet's success and failure in its short life-span lies in the understanding of the concept of "generativity", which can be defined as a systems capacity to produce unanticipated change through unfiltered contributions from broad and varied audiences (Zittrain 2008). Zittrain makes the argument that the early Internet as well as the personal computer, which was a portal or window to gain access to the Internet, have in the past been quintessentially generative technologies, simply a "blank slate" that contained very little software other than basic programming language (Zittrain 2008; Hindman 2010). The original version of the Internet, referred to as Web 1.0 and the early version of Web 2.0 Zittrain argues, was able to withstand early attempts at proprietorship from large online organisations and other corporate networks due to the fact that the Web offered greater flexibility, simplicity and openness for online users (Zittrain 2008). However, due to the initial success of the early versions of the Web, the Internet now faces a generative dilemma (Zittrain 2008). Online privacy concerns, spam, cybercrime, and so on, are unfortunate and unwelcome by-products of generativity on the Internet too. A response to these challenges online has been in the form of "tethered appliances", which gives the manufacturer of that "appliance" - referring to computers, smart phones, home entertainment T.V. game consoles and any other device which can be used as a portal in accessing the Internet - to have the ability to control any and every piece of software that operates and runs on the device. Another response stems from the later/current version of the Web, Web 2.0, were models such as Gmail (Google's free e-mail service) or Google Documents, in which software is delivered as a service over the Internet network

(Hindman 2010). Due to these advancements implemented by the various corporate networks and special interest groups, information appliances and Web services are technically less vulnerable to online threats. Added to this fact, they are often now much cheaper than ever before and easier to use for consumers. However, according to Zittrain, the continuing ubiquity of tethered appliances which are infiltrating the current version of the Web as well as the various portals which allow users entry into the Web has the potential to consume the overall essence and architecture of the Internet and the devices that allow access into it (Zittrain 2008).

As widespread as Internet technologies have managed to become today, these pieces are in place according to Zittrain, to provide a sharp move away from the original "chaotic" design that has been responsible for the rise of the modern information society in which we live in currently (Zittrain 2008). This movement away from the original design of the Web is slowly resulting in the migration away from a generative Web that has encouraged innovation and disruption, two cornerstones which make the Internet what it is today, to an "appliancized" network according to Zittrain, which would incorporate some of the most powerful features of the current version of the Web, while at the same time also greatly limiting the Web's ability to continuously innovate, which would result in the increase of the Web's regularity (Zittrain 2008). When discussing the Internet and the future direction that the Web is heading to, often the discussion stops short of the Internet's "endpoints", focusing narrowly only on the literal network of the Internet itself. Endpoints refer to how many people are connected to the Web, whether and how the Web is filtered and how quickly it is able to carry data online (Blumenthal, 2002: 709-717). According to Zittrain, the questions raised by Blumenthal are important ones, however they risk obscuring the reality that online users experience with the Internet are beginning to become more shaped by the devices that they are using to gain access to the Web (Zittrain 2008). As Internet devices continue to proliferate in the coming years, questions and challenges posed about the concept of network regulation must also be addressed to the concept of endpoints, which until recently have gone unnoticed in the debate within the political economy of new media and Internet policy. In the current information environment which is characterised by the Web, the endpoints also referred to as online users, are an ambiguous category from the perspective of an established conception of an information environment which is composed of a small number of professional producers and a large number of passive consumers. Online users can receive information and at

times have the capability to rework it and send it to other online users, thus having the ability to play the role of both producer and consumer. Their actions of reception are dialogic in the sense that they can easily be mapped as moves in a conversation rather than as endpoints for the delivery of a product or content (Benkler 1998). According to Benkler, this alternative is neither utopian nor preordained (Benkler 2001). Benkler maintains it is possible to have a system that has the potential to break through the traditionally polarised categories of consumer and producer. Traditionally consumers have been prepared to pay more for the "privilege" of being able to participate in conversations than to receive professional content. Expenditure on long-distance and local telephones have been greater than expenditures on newspapers, magazines, broadcast, cable and film put together (Benkler 2001). The fact that these prices were inflated by monopolies does nothing to undermine the conclusion that consumers were willing to pay much more on speaking than on receiving mass-marketed content. A combination of technology, business organisation, and law prevented the development of a widely decentralised information environment where production and consumption were less starkly separated (Benkler, 1998: 299-318). At present, the Internet and the digitally networked environment that presents society with new regulatory choices and barriers, it is important according to Benkler to pursue the goal of the ability to experience the unmediated conversation of the many with the many (Benkler 2001). Internet users are increasingly making use of a range of tethered appliances which reflects resurgence in the initial model of bundled hardware and software that was created and continues to be controlled by corporate interests. A consequence of this according to Zittrain, will affect how readily user behaviour can be regulated on the Web which in-turn will determine the exact extent in which regulators and commercial interests online will be able to constrain the development of amateur innovation, which has been mainly responsible for the majority of what many now consider precious about the Internet (Benkler, 2006: 190-196).

For Benkler, individual freedom is synonymous with autonomy. This autonomy refers to the "freedom to do more for oneself, by oneself, and with others" (Benkler, 2006: 134). The current property rights approach and the industrial information model, Benkler argues, have been organised in a way that restricts autonomy and therefore individual choice and freedom (Benkler 2006; Bates 2007). In addition to the basic legal ownership constraints, Benkler also notes that the constraint of marketability acts to filter the information produced and distributed in

commercial markets. Conversely Benkler argues that the network information model as well as a commons legal approach would result in a greater diversity in both content and conditions of use, which in turn has the potential to enhance choice and freedom for the consumer. Benkler theorises that the commons approach would allow for different types of constraints, which would result in more choice and additional autonomy of the individual consumer (Benkler 2006; Bates 2007).

Mediated experiences and the continued way that new media are responsible for the restructuring of time and space, in changing domestic rituals and in enabling or disabling various forms of sociability suggests that the concept of power relations are at stake within the new media context (Livingstone 2002; Meyrowitz 1985; Silverstone 1999; Silverstone & Hirsch 1992). Mansell suggests that there is still a large degree of latitude for social actors to make various choices about their engagement with new media and that the concept of new media which includes the Internet, may be altered, abandoned or potentially subordinated due to diverse culture as well as social and economic values (Mansell 2004). Mediation is fundamentally dialectical in notion, which requires citizens to address the process of communication as both institutionally and technologically embedded (Thompson 1995).

The study of the political economy of new media has traditionally focused on the ubiquity as well as the various types of new media in terms of products and services which are made available to the user in addition to the access to those new media tools with a dearth of research dedicated to the accompanying structures and processes of power and subsequent hegemony that have become entrenched within them. With the result, the political economy of new media studies has placed an emphasis on actual media content with less of a focus on media structures as well as the labour involved in the production of media. This chapter attempted to make the argument that the political study of new media should focus specifically on the understanding and development of explanations for emerging social structures and hierarchies of power. In addition to this, the research and understanding of the study of new media should also extend to the symbolic form, meaning and action as well as to the structures of power and institutions as described by Mansell, Mosco, Garnham et al. The following chapter in this thesis – chapter three – attempts to frame the role that traditional or "old" media plays within the new media

environment and how traditional media companies have attempted to develop strategies against new media instead of developing new business strategies to embrace new media.

## Chapter 3:

### The role of traditional media within the digital world: - *The transformation of traditional media*

Never before in history have we seen a technology such as the Internet have the immense power and ability to re-order the media, marketing and commerce landscape, which has been completely triggered by the revolution in digital technology. Other life altering inventions such as fire, the wheel, Gutenberg's printing press, the combustion engine and electricity have all played fundamental roles in human development and life on earth over the centuries (Auletta 2009). However, what differentiates this era of innovation from the ones mentioned above is the unprecedented speed of adoption. It took telephones 71 years to penetrate 50 percent of homes around the world, electricity 52 years and television 30 years (Auletta 2009). The Internet reached over 50 percent of homes in the world within ten years and DVD penetration was even faster, taking only seven years to reach half of the world's populous. More recently, Facebook built up a community of 200 million users in less than five years. Because the digital realm is characterised by bits, the Internet and the structures that support it does not run out of supplies or does not have to contend with space constraints. Nicholas Negroponte, the founding director of the Massachusetts Institute of Technology's (MIT) Media Lab, published a book in 1998, titled - Being Digital - in which he proclaimed that the Web would usher in a new generation, "free of many of the old prejudices…Digital technology can be a natural force drawing people into greater world harmony" (Negroponte 1998:17). There have of course, in recent times, also been cases of the use of technology which Negroponte alludes to above, which has been used to further more nefarious objectives too in the case of supporting totalitarian and oppressive political regimes as is the case in China, Iran, Burma and so on.

Technology and user adoption has in recent years moved quickly through the developed world and is incrementally gaining momentum and critical mass through much of the developing world. By May 2009, Nielsen reported that over 230 million Americans had Internet access, 93 percent had high speed access (broadband) and digital cable service with 228 million consumers accessing the Web via their mobile phone (Nielsen 2009). By April 2009, an estimated 1.6 billion people worldwide connected to the Internet, less than a quarter of who were located in North America (Nielsen 2009). In 2008, more consumers around the world got their national and

international news from the Internet than any other medium available to them, with the exception of television, according to a survey conducted by the Pew Research Centre (Pew Research Centre 2009). This is a clear indicator that more choice available to consumers around the world has resulted in an ever shrinking concept of the mass audience. Information and entertainment has incrementally over a period of time, become more democratised, as the advent and impact of technology has empowered the consumer not just to discover any fact from a Google search bar, but to copy and share that information, to access a variety of opinions, both professional and peer-produced, to watch television on their own schedule when it suits them best, to programme their own music that they want to listen to, publish their own blogs for free covering topics that genuinely interest them and their peer-group, shop online at their own convenience and to communicate within an instant with a work colleague or loved-one living in the same city or halfway around the world (it must be mentioned however, that the notion of "access" as well as the challenges of the digital divide still continue to hamper user adoption and online behaviour in developing world markets). These seismic shifts within the fault lines of communication and technology has led to the conclusion among many digital proponents, that the current digital age we are living through and experiencing in real-time, is the most meaningful and liberating period of technological change and development the world has ever experienced. According to François Groepe - the CEO of Media 24 - a South African media business which is Africa's leading publishing group, with business interests in newspapers, magazines, internet businesses and book publishing, "Globally, new technologies are altering the media landscape. This is evident by the fact that there are, on average, 830 million unique users of social networking sites such as Twitter and Facebook on a daily basis" (Groepe 2010).

The digital revolution is not therefore just some passing trend, or insignificant blip on the communications and technology radar. It is an actual revolution, which has and will continue to bring about revolutionary changes and usher in an entirely new way of life (Garfield 2009). The biggest protagonists in this revolution are the mass-media and mass-marketing structures that have for the last century, more or less defined our connection with the world. These structures stand to gain phenomenal growth and access to consumers that they could have only once dreamed of, if the correct strategies are put into place or, as we have all born witness to, painfully stand to lose everything if they continue to adopt their current business strategies which

up to now, has failed and continues to fail at an alarming rate. According to Groepe, "When it comes to news, the online space will augment traditional newspapers, where news is instantaneous and easily accessible" (Groepe 2010).

Traditional or "old" media are currently in a stage of dire retrenchment as a prelude to complete collapse (Garfield 2009). Television, newspapers and magazines in their current form are inextricably on course for ruin, as they battle to regain a foothold or higher ground against the three concurrent and seemingly dominant forces that the digital revolution has unleashed. These forces are namely, audience shrinkage which has brought about consequent advertiser defection; obsolete methods and unsustainable costs which come with their current distribution strategies and; competition from every single computer or laptop user in the entire world. What this new breed of digital consumer call articles, songs or television shows and what the current media industry refers to as "content", will never be the same again. This shift in thinking between consumer and traditional content producers will change the current media environment in dramatic ways, which will have a knock-on effect on other industries such as advertising in equally profound ways. Advertising has always traditionally existed to create communication in its various guises to subsidise the great expense along the vast expanse of old media (Garfield 2009).

This relationship worked in the past because marketers relied completely on old media to reach mass audiences to advertise what they were selling. Marketers have even recently been prepared to pay increasing premiums for the opportunity as audiences have continually shrunk, because even in a fragmented media world, the largest fragment, namely television, is still the most valuable, but even this once mighty bastion of old media is continuously losing mass. When television is not able to guarantee marketers the mass they both require and demand to justify their advertising and media spend, they will have no reason or justification to advertise anymore. Therefore as culturally improbable as it may in fact sound, the days of traditional advertising agencies dictating messages and manufacturing meaning and culture to society, will come to an end. However, the death of traditional media and marketing which is predicted above will usher in a dramatic rebirth of both industries within the context of the digital revolution. According to Groepe, "The fact that the cost of technology has lowered means that more people are able to

upload and download more content than ever before" (Groepe 2010). With new and advanced technology in place, traditional media are now riddled with obvious inefficiencies, from creating their content, to distribution and monitoring their audience (Groepe 2010).

3.1 Traditional media's slow reaction to digital technology:

In the early days of the twenty-first century, few traditional media companies had taken the imposing threat that digital media, powered by the Internet would have on their businesses. Newspapers saw their circulation and advertising revenues slipping - from a peak daily newspaper circulation rate of 65 million in 1984 - circulation fell steadily at an average of one percent each year until 2004, when the drop became more precipitous (Nielsen 2008). Publishers did speak of moving aggressively to create digital newsrooms and other digital investments that would stand them in good stead once the consumer migration from analogue to digital took place. But the chains that owned most newspapers were predominantly interested in getting bigger in order to gain more leverage (Garfield 2009). So instead of pursuing a digital business strategy, old media employed a business as usual philosophy. There was little urgency from old media organisations to move to the Web. Online newspapers were usually seen and treated like the poorer relation of print editions, not allowed to break stories or to employ their own separate staff members for the online edition of the publication. The online editions were also not allowed to look or feel too much different from the traditional newspaper either (Auletta 2009).

Network T.V. viewing also had similarly been eroding incrementally over time. The traditional networks' responses to the decline was like that of any traditional, archaic business model or strategy; they cut costs and bought local T.V. stations and cable properties, syndicating more of their own shows and content and just like movie studios had done, put their faith in big budget "hits" and "blockbusters" to keep their audience and consumers loyal to them (The Economist 2010).

Part of the strategy for old media companies in the midst of the growing influence of digital in the media environment, was convergence and synergy. According to Jenkins, there are a number of forms of convergence which are in the process of redefining the media environment. These variables include; technological, economic, aesthetic, organic and global (Jenkins 2008). The

common philosophy of traditional media was that the advantage accrued to vertically integrate corporate giants, like News Corporation, AOL Time Warner and Disney, who were then able to control every step in the process from an idea to its manufacture to its distribution. The synergies would not come from partnering with other companies but from owning content and the powerful means to distribute it to the consumer. Despite growing literature that studies the performance consequences of vertical integration choices (Macher and Richman, 2008) - gaps continue to exist in our understanding of this topic – particularly in the context of new product development.

With that as the basis of traditional media's business strategy, these media companies pushed to blur the boarders between traditional industries. The broadcast networks acquired cable networks; the telephone companies acquired cable distribution companies; the cable system owners invested in content companies and telephone services; Hollywood studios bought out broadcast networks along with music, game and book companies; and newspapers bought out local cable and radio stations. It resulted in an incestuous mix of media companies buying out other media and communications companies. Examples of media companies purchasing other media and telecommunications businesses include AOL, News Cooperation, ABC, NBC and so on (http://www.nytimes.com/2011/02/07/business/media/07aol.html?_r=1).

Meanwhile, music companies, rather than marketing singles as they once did, and what consumers now again wanted, continued to push the sale of entire albums. While traditional music companies showed such arrogance and disdain to their own consumers, a tiny little online upstart, started in a university dorm room called Napster, offered free digital downloads of the music industries own content to delighted consumers. Instead of seeing these new digital distribution channels direct to their own consumers, the music companies failed to even attempt to accommodate digital music file-sharing and chose instead to choose the litigious route, by prosecuting not only Napster and the plethora of other online free music file sharing sites, but prosecuting their own loyal, music loving consumers. In MGM v. Grokster, the United States Supreme Court developed a new test for determining whether a distributor of a "dual-use" product – which refers to a product that is capable of both lawful and unlawful use – might be liable for acts of copyright infringement committed by users of the product. The US Supreme

Court's ruling found that distributors are indeed liable for third-party misuses of a product if the distributors' marketing efforts actively induce copyright infringement (Olazabel; Cava; Sacasas 2006). MGM Studios successfully sued Grokster and StreamCast for multiple copyright infringement, alleging that the two firms distributed P2P file-sharing software that enabled users to reproduce and distribute copyrighted works in violation of the then existing Copyright Act. The P2P technology used by Grokster and StreamCast differed slightly from the technology which was previously developed and used by P2P industry pioneer Napster, whose software required users to share files by sending them via centralised computer network nodes. Another example of legal action on behalf of large media companies against smaller technology start-ups is the case of A&M Records v. Napster, the Ninth Circuit Court of Appeals in the United States found ruled that Napster was liable for failing to use its centralised system to monitor and prevent copyright infringement on "protected" copyrighted works (Olazabel; Cava; Sacasas 2006).

For their role, movie executives in Hollywood continued to spend vast amounts of money on that summers next blockbuster movie that would keep bringing consumer into the cinema every weekend. Like music executives, Hollywood often blamed their flattening sales on the failure to come up with more blockbuster hits or on outside interference like piracy of their content. Traditional media held firm in the belief that "content was king". Cable and telephone companies swallowed their smaller peers and vied to expand their own broadband wires, convinced in the belief that he who controlled the distribution channels would be king.

Book publishers also merged while their sales dropped and traditional physical book stores closed. Publishers resisted the concept of electronic books, as a decade earlier they had resisted CD-Rom. Old media companies were trapped in the concept of the "Innovators Dilemma" (Christensen 1997). This theory was developed by Clayton M. Christensen in 1997, and refers to well-managed companies that, confronted by new technologies or new business models, floundered by fiercely defending their current business models and not instituting or changing their existing business models fast enough (Christensen 1997).

Defensiveness mixed with fear has fuelled old media companies to resist change which has and continues to have detrimental effects on their businesses. Traditional media companies did not see themselves as potentially superfluous middlemen in the media environment. They fervently believed relationships mattered. They tended to believe that most digital devices would prove to be too complicated and too user "unfriendly" to consumers. Traditional media companies clung to the conviction that people preferred to lean back rather than lean forward to be entertained, to relax on a couch rather than sit up right at a desk (Auletta 2009). They believed that few of their loyal consumers would read a newspaper, magazine or a book online or on some science-fiction hand-held device. How wrong they were about this new generation and how they would not only interact with technology but come to fully embrace it.



3.2 Are traditional media drowning?

Arguably, no other traditional media business has been so disrupted by the advent of digital and the Internet as the music industry. What is undisputable however, was the incredibly slow response by the music industry to the challenge/opportunity that digital presented to their industry. Big traditional music companies like Sony BMG gave an incentive to digital "pirates", by insisting that their own consumers buy the entire albums of their favourite artists rather than allowing then to have the ability and choice to just purchase individual tracks. Music companies have failed to understand that technology has given power firmly in the hands of the consumer, to mix and choose their own music. These traditional media companies also failed to reach an agreement or some form of accommodation with music file-sharing websites such as Napster and other download music sites, failed to create a digital jukebox concept like iTunes, failed to enter the now lucrative live music concert business for their own artists and failed to start a T.V. platform like M-T.V. The above mentioned failures is an indictment to the lack of creativity and innovation that music companies have portrayed over the years and no wonder they find themselves in the predicament they do today, and it does not look like it will get any better for them in the future.

Into the 1990's, the bestselling albums sold at least 15 million copies (Annenberg School Centre for the Digital Future, USC 2008). In 2007, the top-selling album registered only 3.7 million in sales (Annenberg School Centre for the Digital Future, USC 2008). Consumers are listening to

more music, but are paying much less if at all for that privilege. Major artists such as Madonna, are even now bypassing traditional music companies altogether. Following the pre-digital model of the American band - The Grateful Dead - who built their audience by encouraging fans to tape their performances, acts like contemporary British band Coldplay made single songs available for free over the Internet in 2007.

In 2007, worldwide digital music sales had raised to 15 percent of all music sold worldwide, an increase from less than one percent in 2003. Yet this rise in sales could not compensate for the increasing decline of more expensive CD sales, which fell by ten percent that same year (Annenberg School Centre for the Digital Future, UCS, 2008). Music companies were in the business of selling full albums and since their sales peak in 2000 of nearly 800 million albums sold, album sales in 2007 plunged to just over 500 million worldwide (Annenberg School Centre for the Digital Future, UCS, 2008). These events can help explain why music company revenues have dropped significantly from the estimated 14.2 billion dollars in 2000 and will further drop to approximately 9 billion dollars by the year 2012 (Forrester Research 2009).

Newspapers find themselves in the same predicament as the music industry. It is true that if publishers add website visitors, newspapers and magazines had a net increase in readers over the last five years (Auletta 2009). Approximately 20 million unique visitors went online each month in early 2008 to the largest newspaper website on the web, the New York Times (Forrester Research 2009). This statistic can prove misleading however, as online audiences' pay far less attention to advertising and spend even less time with an online newspaper. According to Jim Kennedy, the president of strategic planning for the Associated Press, newspaper revenues in 2007 totalled 60 billion dollars with online revenues accounting for only 4 billion of this total amount (Kennedy 2008). Theoretically, a newspaper that abandons print all-together to only publish online could save up to 60 to 80 percent of its total overall costs, having done away with only the expense of the cost of paper that it takes to print the physical newspapers, the cost of printing and distribution (Auletta 2009).

To date however, with the exception of the *Wall Street Journal* in North America and the Financial Times in Britain, few if any daily newspapers have succeeded by charging for online

subscriptions or enforcing "pay-walls" on their readers. With online newspapers generating tiny amounts of advertising revenue and zero circulation revenues, and with younger readers migrating online and showing less loyalty to a particular news brand or source, newspapers that attempted to publish only online would undoubtedly subtract more of their overall revenue than they would be able to add to it.

Book publishing according to Paul Aiken of the Authors Guild is in a far better position than the music, newspaper or magazine industry (Aiken 2009). Aiken believes the physical format of books and the publishing business model is not as easily altered by the advent of digital and the Internet. Nor does he believe that book publishing is dependent on fickle advertisers, as are newspapers and magazines. Research shows however that Aiken's confidence may turn into hubris. Book sales were relatively flat 2007, reaching 3.13 billion dollars in North America, which constituted a rise of less than one percent from the previous year (Authors Guild 2009). Publishers will not readily admit it, but what this data exposes is that books are slowly but surely losing readers in the younger demographic. Nearly half of all people aged between 18 to 24 years of age read no books for pleasure, and the percentage of people within the ages of 18 to 44 years of age who read books were dropping dramatically year-on-year (Authors Guild 2009). Publishers are also worried about whether Google Books would bring them the same piracy concerns that have plagued the music and movie industries.

Traditional broadcast radio, with the notable exception of sports and talk radio, is also facing a dire future in the digital media world. All radio is overrun with too many advertisements and counter-intuitively for the consumer, too many choices. From Internet radio to podcasts to iPods to Mp3 players, all of which siphon off traditional listeners from radio because they empower to consumer to become their own D.J.s. Technology it appears has become a "frenemy" of all traditional media businesses and channels. By providing the consumer with all the choice they can handle, new technology inevitably has disrupted traditional consumer media consumption habits. The audience that had once belonged to broadcast T.V. moved to cable and satellite, to video on demand, to DVDs, to YouTube and Facebook. TiVo and DVRs have allowed consumers to become their own programmers. This has proven to be liberating for the viewer but incredibly debilitating for the traditional media producers and distributors of content.

3.3 From broadcast to networked:

For the last few centuries, society have been living in an era of broadcast media, but are in the process of switching to an era of networked media, which will fundamentally alter the structure by which information flows (boyd 2010).

The definition of "information flow" within an information landscape which is defined by networked media refers to consumers online not being passive consumers of information, but rather to live in a world where information is everywhere (boyd 2010). To be peripherally aware of information as it flows, grabbing it at the correct moment when it is most relevant, valuable, entertaining, or insightful to the consumer. The concept of information flow will allow consumers online to live with, in and around information which the immergence of Web 3.0 will help facilitate.

Broadcast media structures recognise the efficiency of a single, centralised source, which can be characterised by mass audiences tuning in to receive the same message, all at the same time. These mass-messages have been delivered over the years by traditional old media channels such as newspapers, magazines, T.V. and radio, all delivering the same content. Centralised sources of information have always been powerful because they have the ability to control the means of distribution. However, broadcast media structures, with all its traditional power to reach a mass audience have always taken one aspect of consumer and viewer behaviour for granted; namely attention. An assumption has always been held by mass-media, that all their viewers or listeners will give the content that the broadcast channel of communication disseminates, their undivided attention. However, over the last few years as media has become increasingly more proliferated and with the rise of the Internet as an additional media channel of distribution, consumer attention has become more fragmented. This fragmentation of consumer attention has led to increasing numbers of media entities competing for diminishing consumer attention, in a world where consumers have never had more choice and options in terms of media channels available to them.

The opportunity for media creation has been increasing over the last few decades. The rise of the Internet has provided new mechanisms through which traditional passive consumers of content

now have the ability to become active producers of content which they can make available to be consumed by themselves and others online. From social network sites, blogging, media sharing sites and sites that provide social streams, the immergence of countless ways in which a motivated consumer can make their own personal content available has grown exponentially in a short period of time.

Internet technologies are fundamentally dismantling and reworking the structures of distribution (boyd 2010). Distribution is characterised by a process by which content creators find channels through which to disseminate their content that they have created. In effect, this can be seen as a model of "pushing out" content. As networked technologies proliferate around the planet, a channel of distribution has become available in one form or the other to everyone and between everyone. In theory then, anyone could share content with anyone they choose, anywhere in the world. With the barriers of distribution imploding, what matters is not the actual act of distribution, but in fact the act of consumption (boyd 2010). Thus the power no longer rests with those old media companies that controlled the channels of distribution, but with those who now control the limited resource of consumer attention. Consumer attention has now become the most valuable commodity within the new media landscape. While the traditional structures of distribution are being dismantled, new forms of information dissemination are being built. Consumers throughout the network are using the attention they receive to traffic in pointers or links to other content, serving as content mediators.



As media evolves from a broadcast to networked model, an understanding of how information flows differentially in a networked model compared to a broadcast model must be understood as well as the potential challenges of seeing the emergence of a networked model come to fruition. According to dana boyd, there are four core issues which are vital for allowing the evolution to a networked model to become a reality;

- ***Democratisation:*** Switching from a model of distribution to a model of attention is inherently disruptive, but not necessarily democratising. This is a common misconception when referred to the shift. Consumers may be democratising specific types of access, but they are not democratising attention. Even though this society is moving towards a state

where anyone has the ability to get information into the content stream does not necessarily mean that attention will be divided equally. The opening up of access to the structures of distribution is not democratising when distribution is no longer the organising function. What consumers will give their attention to depends on a number of factors that does not have anything to do with what the actual best content there is available to them. At the most basic level, consider the role that language plays in their decision. Consumers will pay attention to content that is in their language, even though online they can have access to content in any language (boyd 2010).

- ***Stimulation:*** Consumers will interact with content that has the most appeal to them. Content that can elicit anger, excitement, energy and that ultimately entertains them, or can create some form of emotional response in them will be sought out and consumed. This type of content is not necessarily always the "best" or most informative content that is available to them, but it is the type that triggers a reaction from them. Stimulation has the ability to create cognitive connections (boyd 2010). But it is possible for there to be too much stimulation. We would not want to be in a situation where we develop into a disconnected, numb society, nor a society of unequal social connections. So a constant drive towards greater and more intense stimulation may not be what we want in the long term.

- ***Homophily:*** Within a networked world, consumers tend to connect to people similar to themselves. What therefore flows across the network flows through edges of similarity (boyd 2010). Having the ability to connect to other consumers similar to themselves allow for information flow across space and time in new ways, but there is also a negative aspect. Negative social implications such as prejudice, intolerance, bigotry and power are all intertwined into networks. In a world made up of network media, it is not that difficult to not get access to views and opinions from people who may think from a different perspective. Information can and does flow in ways that can create and reinforce social divides in society. Democratic philosophy depends on the ability of shared informational structures, but the combination of self-segmentation and network information flow means that consumers have the ability to lose the common rhetorical

ground through which they can converse (boyd 2010). In an era of networked media, consumers need to recognise that networks are homophilous and need to operate within these networks accordingly. Technology does not inherently disintegrate social divisions, even though it has the immense power to connect users with one another. In-fact, more often than not, it reinforces them.

- ***Power:*** When thinking and referring to centralised sources of information distribution, it's easy to understand that vast amounts of power is at stake. But networked structures of consumption are also configured by power and therefore it is important to keep in mind that access alone is not just power. Power is also about having the ability to command attention, influence others' attention, and traffic in information (boyd 2010). Power is given when consumers give their attention and consumers gain power when they are able to bridge between different worlds and determine what information can and will flow across the network. Within a network culture, there is also power in being the consumer spreading the content. In a broadcast model, those who control the distribution channels often profit more than the creators of the actual content. There is also an assumption that if the limitations of the means of distribution are removed, the power will revert automatically to the creators of the content. However, this is not an accurate assumption. The distribution structure which is currently being implemented is making consumers aware that they can come and get content, but those who get access to those consumers attention are still a small, privileged few (boyd 2010). Instead, we are seeing a new type of "information broker" emerge, who get credit for their structural position, which has in-turn, lead to the old controllers of information losing their stature within the networked media model. What has subsequently immerged is not inherently the power of the creators, but the power of the modern-day information brokers (boyd 2010).

As the information ecosystem evolves, more changes will take place, such as information spaces becoming more niche environments. The evidence of this evolution will manifest itself in the way consumers direct their attention and also in what new enterprises will flourish. Successful businesses will not be everything to everyone, which has traditionally been the broadcast model mentality. Instead, successful businesses will play a meaningful role to a coterie of committed

consumers who give their attention to them because of their relevance to the consumer (boyd 2010).

In order to be relevant in the network media model, it will require understanding context, popularity and reputation. In the broadcast era, it was assumed that the disseminator of content, organised information because they were a destination for consumers. In a network era, there will be no destination, but rather a network of content and consumers. It cannot be assumed that content will be organised around topics or that consumers will want to consume content organised in such a manner. This is already being seen in "stream-based" media consumption. In other words, when consuming information through social media tools, consumers consume trivial, frivolous information such as celebrity gossip, alongside productive content and news. The key however is not going to be to create distinct destinations organised around topics, but to find ways in which content can be surfaced in context, regardless of where it may reside originally.

Making content work in a networked era is going to be about "living in streams" consuming and producing alongside consumers. Consuming to understand, producing to be relevant (boyd 2010). Content creators are not going to have the ability to dictate the cultural norms of society just because they have the ability to make their own content available. They will still be held accountable to those consumers who are responsible for trafficking content.

There will also be a need for technological innovations. Tools that will allow consumers to more easily contextualise relevant content as well as tools that will allow consumers of content to be able to filter through the vast amounts of information and content which will be available to them so as not to reach a state of "information overload". This will not be as simple as aggregating or curating content to create personalised destination sites however. Instead, these new tools will need to allow consumers to get "live inside" information structures (boyd 2010). These tools will also need to allow consumers to easily obtain what they need and stay peripherally aware without feeling overwhelmed.

3.4 The endangered economics of centralised media:

The most dominant structures of communication over the past century, namely broadcast and cable T.V., radio, recorded music and theatrical film all required vast amounts of centralised capital, professional control and corporate management to be successful. The above mentioned media channels all have differentiated business models and practices, but are inextricably linked together due to their reliance on centralised control of distribution and capital to large, undifferentiated audiences.

Each media channel relies on efficiencies derived from a business model which is characterised by high volume sales and a limited spectrum of commercial choices (Bollier 2008). Centralised media also dictates specific economic and social identities for consumers. There are "sellers" who are the prime source of expertise, innovation and production and there are "consumers" who will passively buy, or don't buy what is being offered to them by these centralised media channels. Sellers more often than not determine what choices are offered to buyers and tend to have greater market power and information compared to that of consumers. The relationship and interactions between sellers and consumers are brief and transactional in nature and there is little to no on-going conversation or relationship between seller and buyer.

Much of the strength of the centralised media model is derived from its control of the critical choke-points of product development and distribution (Bollier 2008). By controlling the technical standards for a product, its retail distribution and its brand identity a centralised media company can maximise their competitive advantages and limit competition from other sources. The vast amounts of capital needed to communicate through the medium of centralised media outlet is in itself an extremely effective way to limit competition. Therefore it is common that only large, publicly traded corporations such as News Corporation owned by wealthy individuals such as Rupert Murdoch, control much of the centralised media and that the messages that is disseminated from these media outlets are overtly commercial or commercially friendly. While this centralised media business model is on the surface quite piquant for those who are financially invested in these types of media companies, this business model also entails some exorbitant costs that are not that evident on first inspection.

It is imperative that these types of media companies have to spend large amounts of money and resources on advertising to enable them to build a brand identity for their media company in order to enhance sales. The concept of the "block-buster" business model entails large up-front costs in order to be able to gain large financial returns. Centralised media companies require expensive systems for finding, recruiting and developing stars and star programming; elaborate marketing structures to find and attempt to retain customers; and legal and technological means to be able to identify and prosecute the "piracy" of their creative works (Bollier 2008). In a static environment in which these centralised media companies once existed, this model of business was relatively effective.

Since the immergence of the Internet over the last few years however, distributed media has begun to undercut the once seemingly infallible economic logic of centralised media. Online users very own personal computers, connected through the Internet to other online users' computers all around the world via relatively inexpensive telecommunications and software has allowed for business to be done a lot cheaper. The advent of distributed online media, enabled by the Internet, has not only facilitated the avoidance of once costly overheads needed by centralised media, but also has the ability to generate dynamic, interactive and sociable means of communication. At the forefront of this new type of communication brought about by distributed media is User-Generated Content (UGC).

While UGC is characterised by "amateur content", it is widely variable in terms of quality of content but does possess one distinct virtue; it is by far more culturally diverse and authentic than the homogenous, over-produced programming and content that centralised media has produced over the last century. Because distributed media's economic business model is not to amass large and undifferentiated audiences, the content that is produced can be more idiosyncratic, passionate and it its own unique way, as creative as it desires to be (Bollier 2008). The biggest challenge distributed media faces is how consumers are able to locate what they want to consume in terms of content among the millions of choices that they have at their disposal.

Because of these factors, more in particular the economic, traditional media, which is characterised by centralised media, are becoming more susceptible to the most advanced Internet

competitors currently online. These distributed media companies include Amazon, eBay, Google and Yahoo!, as well as to new types of non-market driven social production businesses such as Wikipedia, Craigslist and other special interest affinity groups found online. According to David Bollier in his 2008 book titled - Viral Spiral - a reality may be approaching a point at which the historic cost structures and risk management strategies of major media companies are no longer sustainable (Bollier 2008). Media analysts have been concerned about the long term viability of the newspaper industry, which collectively fell by 42 percent between 2005 and 2008 (Nielsen 2009). Broadcast and cable T.V. also have similar fears that their values are dropping precipitously. These media channels worry, and with justification, that the Internet and the distributed media companies which exist on the platform are siphoning away eyeballs of consumers by providing more timely and convenient alternatives to content than consumers had previously had available to them.

While the UGC, amateur videos that proliferates on Internet websites such as YouTube may not necessarily have the production quality of a major T.V. or cable network, these centralised media companies cannot ignore a platform that in 2006 was attracting more than 100 million video downloads every single day and had a market valuation of 1.65 billion dollars when it was bought by Internet giants Google at the end of 2006 (Auletta 2009). Forward thinking traditional centralised media companies are slowly embracing and understanding the power of distributed media online, when in 2007, Cable News Network (CNN) owned by another large traditional media holdings company, Time Warner, decided to co-host the United States presidential debate in partnership with YouTube. The motivation for leveraging an online distributed media channel was intended for CNN and Time Warner to reassert it cultural relevance with its viewers.

However, other traditional, large centralised media companies are struggling to support major financial, administrative and marketing burdens in an attempt to merely keep the head above water and retain some reasonable measure of their customary market dominance. The financial burdens of this expensive strategy may also explain the reason why centralised media are extremely focused on influencing government policy in terms of regulation. Traditional media companies are attempting to lock in any competitive advantage that they have left over distributed media companies by enforces governments around the world to impose regulation.

For example, consider the ferocious battles over media ownership rules, spectrum allocation policies, anti-copying technology mandates such as the "broadcast flag", new copyright and trademark protection policies. The main motive for centralised media companies interest in securing legal and regulatory privileges for themselves suggest that they are their current media business models are in a relative state of decline. The only alternative left for these traditional media companies is to pursue market advantages through political interventions assisted by government than through superior performance, price, innovation and creative business strategies.

3.5 The economic advantages of distributed "open" media:

By staggering contrast, a profusion of new ventures are proving that an organisation can thrive on the distributed, open networks which the Internet facilitates. Start-up companies without any form of brand recognition or regulatory preferences can now equally compete, if not usurp entrenched old media competitors on the merits of price, quality and responsiveness. These new start-ups have the ability to leverage user-generated content and the vast supply of value which was previously referred to as the "public domain". The exponential success of many new Internet businesses reflects an epochal shift with regard to competition. The shift in terms of competition can be defined accurately due to the shift in how value is now created for consumers. The most dramatic shifts throughout the history of capitalism in the world have come when new mechanisms have had the ability to lower the cost of managing risk and serving latent market demand (Bollier 2008). Currently, the media economy finds itself in such a stage of economic transformation, with the Internet facilitating some deep shifts in the cost structures and scale of markets.

Innovative online business models are in the process of significantly undercutting the archaic and expensive cost structures of the traditional centralised media companies and in the process, creating entirely new types of markets. These include search engine advertising, discounted travel companies and other speciality niches. Another creative development which has immerged from these innovative new business models online is the concept of "open-business models" that reject "closed", propriety technical standards and content restrictions which were conspicuously prevalent in centralised media business models. Unlike these traditional twentieth century

business models, the new open-business models have the ability to make money by aggressively instituting themselves within open networks. In this way, they are able to better identify new trends, interact with consumers, mobilise talent and develop customised products at a faster and more efficient rate than that of competitors. They are in the process of building new business models which are informed by the social behaviours of online users and consumers.

Social networking sites such as Facebook and MySpace for example host a social network of more than 100 million friends on it (Newsweek 2010). Online auction site eBay has consolidated the world's existing physical concept of garage sales and flea markets into a more efficient online, digitally driven market by developing web-based software that has the ability to "manage" social trust and online reputation which allows the site to evolve with user interests. Amazon has become a premier online retail website through hosting a digital platform which is open to all types of online vendors and consumers, who are encouraged by the recommendations and collective purchasing habits, behaviours and records of other online consumer buyers on the site. This is a typical example of how these new business models are able to harness the power of collective wisdom or as James Surowiecki refers to as "the wisdom of crowds" in his 2005 book by that same title. Similarly, Google devised its famous "PageRank" search algorithms to enable it to aggregate the web-surfing wisdom of the crowd, making online searches for their consumers so much more useful.

The net result of the level of speed of innovation and creativity from the above mentioned distributed open media companies is proof that open media platforms have the power to significantly reduce business coordination and communication costs by being able to leverage people's natural social behaviours in such a way that conventional old media businesses simply cannot do. Open Web platforms have allowed for large and distinctly diverse groups to be able to organise themselves and their projects so much more easily than before. Individuals and consumers alike have much greater self-defined choices and also the capacity to be able to express their own unique market demand. These consumers also do not need to be constrained, hampered or dictated to by the choices which are presented to them by the market.

The Internet has also opened up a reservoir of channels of "virtual word of mouth" (VWOM), which has proven over time to be a more credible source of trustworthy and dependable consumer information than traditional advertising could ever wish to be. Companies with excellent products are able to leverage their online VWOM to reduce their overall marketing and distribution costs. The immergence of "smart-mobs" (Rheingold 2004) which again harness the power of the collective impact of the wisdom of crowds can propel seemingly once obscure bloggers online as well as websites to prominence because consumers regard these sources of information as more trustworthy, expert in that particular field of interest or subject, authentic and sometimes even more entertaining than that of what the centralised media structure has to offer.

As more consumers migrate to the Internet and as the Web continuously evolves from Web 2.0 to Web 3.0 in the coming years, advertising revenue for centralised media companies will continue to erode even further, resulting in a rush from these old media companies to attempt to devise "new" advertising vehicles to reach Internet users and consumers of distributed open media channels and companies. Old media companies will be forced to make these changes to their business models and strategies sooner rather than later as distributed media companies is where their previous consumers' eyeballs have migrated to. The value proposition of distributed open networks is also too valuable and attractive to be ignored (Bollier 2008). But, precisely because the value proposition of distributed open networks are so inherently different from the conventional traditional, centralised media structures, the new strategies that traditional media organisations will need to implement will have to be able to revamp and transform its organisational structures as well as their strategies and marketing efforts. But the implementation of these new business models and strategies will force traditional centralised media companies to enforce what will seem like difficult decisions to implement. The biggest challenge for these types of companies will be whether to go against everything they have stood against and fought so hard to prevent, as Bollier refers to as going native and letting their products and content loose on an open network (Bollier 2008). In adopting this new strategy, traditional media companies will risk the ire of board-members and company shareholders as this new business model will lead to the destruction of their firmly entrenched current business models for their T.V. shows, theatrical films and recorded music C.D. sales.

However with all that has been recommended and prescribed to traditional, centralised media companies, it is unrealistic to think or expect the vast infrastructure and current business models and practices of centralised media to be completely abandoned. But, if centralised media companies intend to remain economically viable and profitable over the next century, significant changes will have to be implemented to ensure their relevance and survival in this new digital age of media characterised by the Internet and distributed open networks.

3.6 Where is the evolution of the Internet and Web 3.0 taking traditional media?

Online businesses point to the fact that their services and technology are "free" to consumers due to their online business model that states advertising pays for everything. This proclamation by online businesses such as Google, Facebook, Twitter, Wikipedia and a host of other household online businesses, is affirmed by Chris Anderson, the editor-in-chief of Wired Magazine and the author of Free: The future of a radical price. Anderson argues that making information and content free to consumers allows digital content creators to use the Internet as a promotional platform to be able to create alternative money streams for their businesses, including concerts, selling inventory online, lectures and talks as well as other premium services (Anderson 2009).

In the digital world of the Internet, Anderson suggests that the concept of free becomes not just an option but inevitability. According to Anderson, bits found on the Internet want to be free (Anderson 2009). Jeff Jarvis, in his book titled - What would Google Do? - argues that online news aggregators like Google are the equivalent of newsstands that help papers boost online circulation and serve as promotional platforms for newspapers (Jarvis 2009). By increasing their online traffic, Jarvis goes on to say that aggregators allow papers to charge a higher price for their online advertising space. He firmly believes that newspapers should forge a strategic relationship with aggregation sites and engines online with the purpose that more readers can discover their content. Jarvis concludes that the concept of "free" is impossible to compete against. He believes that the most efficient marketplace is a free marketplace (Jarvis 2009).

There is no debate around the fact that in the online environment, the power of links increase the number of newspaper readers in the offline world. But there is a growing consensus among industry experts that the concept of "free" may actually not be free at all. More consumers are

slowly coming to terms with the fact that they will need to pay for content online, something that would have been unthinkable just a few short years ago. For example, iTunes, Amazon's Kindle and Apple's recent market offering the iPad, are so far successful models for online pay-for-content services. Certainly there are products that consumers are willing to pay for on the Web, most notably the music found on iTunes.

Google, arguably the most successful and influential online business on the Web today, generates three percent of its revenues by charging corporations for premium services, such as tailored searches, special software applications and additional Gmail storage (Auletta 2009). Consumers who want online access to the full American newspaper the *Wall Street Journal* or the *New York Times* archives, pay for it and are willing to do so. To access either of these newspapers on consumers Kindle or iPad devices, consumers need to pay for that privilege too. Ultimately, while advertising will remain the primary revenue driver for Internet content companies, the online marketplace will begin to see more examples of consumers paying for content, the way they would do in the offline world.



3.7 The movement from an "open-web" to semi-closed platforms:

A developing pattern on the Internet which has emerged over the last few years has been the shift on the Web from a concept of a "wide-open" Web to semi-closed platforms that use the Internet for transport and access to information but not the browser for display. This has come about due to the fact that online users are more regularly choosing - not because they are rejecting the idea of the Web - but because the emergence of dedicated platforms, often work more efficiently and conveniently and fit better into their daily lives and routines. In essence, the screen comes to the user therefore the user does not have to go to the screen (Anderson 2010). The fact that media companies and other telecommunications organisations which power the Internet have found this shift to semi-closed platforms profitable for their businesses has also led to greater growth in this trend on the Web over the last few years. The control the Web obtained from the vertically integrated, top-down media world can now, with the rethinking of the nature and use of the Internet can be taken back (Wolff 2010). This ultimately will lead to the Web having two contradictory faces. On one side, the Internet has meant the breakdown of incumbent businesses and traditional power structures. Conversely, on the other side, it has been a constant power

struggle, with many media and telecoms companies hedging their business strategies on having the ability to control all or greater pieces of the Transmission Control Protocol (TCP)/ Internet Protocol (IP) universe (Wolff 2010). This point can be illustrated through large Internet companies such as Amazon.com attempting to dominate retail online or Yahoo and Google trying to monopolise the navigation of the Web. The Web in essence is in fact just one of many applications that exist on the Internet, which makes use of TCP and IP protocols. In the current version of the Web, the content flowing freely on the Web, mainly in HTML format delivered via HTTP protocol accounts for less than a quarter of Web traffic on the Internet. The applications that account for the majority of Internet traffic include P2P file sharing, e-mail, machine-to-machine communications, online gaming, and so on (Wired Magazine 2010).

This shift is also in the process of increasing. Research predicts that within the next five years, the number of users accessing the Web from mobile devices will surpass the number of users who access the Web from PCs (Morgan Stanley 2010). Due to factors such as smaller screens, mobile traffic tends to be driven by speciality software, mostly in the form of apps, which are designed for a specific, single purpose. In the quest for user optimised experience which smart phone and other mobile devices such as the Apple iPad are able to deliver users' are increasingly forgoing the general-purpose use of traditional web browsers. According to some Internet theorists and economic experts (Anderson & Wolff 2010), this shift was inevitable and reflects a long history, tradition and cycle of capitalism. As a technology is invented, it spreads and obtains critical mass, and then special interests find a way to own it, which proceeds to the locking out of others. According to Anderson and Wolff (2010), this characterises the natural path of industrialisation, namely; invention, propagation, adoption and control. Therefore, just like any other technology in history, the Web now faces the pressure for profits from large organisations and the concept of "walled-gardens" that this brings.

This attempted "enclosure of the information commons" potentially has far reaching effects on those who firmly believe that the notion of access to information as well as ideas is crucial to the prosperity of cultures and even the overall functioning of democracy (Haupt 2008). In his description of the Internet as a "commons" Bollier (2003) discusses four strategies that have lead to the continuing enclosure of the Internet commons. These include; the first strategy is the

continued "privatisation of public knowledge" in which the author cites the DMCA as an example of this move towards privatisation (Bollier 2003: 119-134); The next strategy includes the use of proprietary technical standards as a means to sabotage "open" standards, innovation, as well as the act of openly sharing information; the third is the implementation and use of concentrated market power to be able to limit the access to the Internet as well as limit users within proprietary "walled gardens"; and the final strategy includes the privatisation of Internet governance which is at the expense and detriment to the ordinary online user (Bollier 2003:108). Bollier's discussion on the various strategies that have led/continue to lead to the privatisation of public knowledge through the enclosure of the commons dove-tails off similar sentiments offered by academic scholars Noam Chomsky and Edward S. Herman (1988) in their work regarding corporate-owned news suppliers. In their 1988 book titled – Manufacturing Consent – Chomsky and Herman contend that the size, ownership as well as profit orientation play a key role in the extent to which diverse perspectives circulate in the mass media, due to the corporate news suppliers being less likely to attempt to cover and report on news that could potentially undermine or detract from their media holding companies' vested interests (Chomsky; Herman 1988). This results in the formation of narrowly set news agendas and reporting which directly results in corporate interests being served, which in turn leads to a reduction and lack of plurality in views and information that becomes available to society within the public domain (Haupt 2008). Bollier (2003) makes use of a similar logic and understanding when he discusses the concept of Internet and ownership. Bollier cites Benkler (1999), who maintains that concentrated ownership of media in turn raises the cost of information, which leads to a larger barrier of entry for amateur media practitioners in the form of UGC, non-commercial media producers as well as independent media in terms of giving them the ability to operate.

Both Bollier (2003) as well as Lessig (2001) highlight concerns pertaining to the ethics of large corporate entities in relation to their nefarious responses to perceived threats – such as open source software – while they endorse the adoption of open standards of protocol that will lead to the continued operation of the "information commons". Both Bollier and Lessig reveal that their agendas are not purely anti-capitalist in nature or motivation. Bollier makes this point in terms of highlighting the need for markets as well as the commons:

> It should be stressed that protecting the commons is about maintaining a balance, not bashing business. It is self-evident that we need markets. It is far less clear – particularly to businesses operating within markets – that we also need a commons. A society in which every transaction is mediated by the market, in which everything is privately owned and strictly controlled, will come to resemble a medieval society – a world of balkanized fiefdoms in which every minor grandee demands tribute for the right to cross his land or ford his streams. The flow of commerce and ideas – and the sustainability of innovation and democratic culture – will be seriously impeded. (Bollier 2003: 3-4)

Based on Bollier's sentiment mentioned above, business therefore needs the commons in order to be able to generate new ideas as well as to develop new products, innovations and services in order to access markets. Bollier's use of metaphor between the enclosure of the information commons and feudalism assists in his clear distinction of Benkler's claims that enclosure leads to an increase in the cost of access to information (Benkler 2003). Lessig (2001) agrees with Bollier's hypothesis, and maintains that the commons of the Internet maintains the promotion of creativity, innovation and competition within a free market economy (Lessig 2001). James Boyle (2003) also supports Bollier and Lessig's hypothesis and adds that intellectual property rights may indeed lead to the "slowing down" of innovation, due to the fact that by placing a number of barriers in place, multiple required licenses, in the way of subsequent innovation (Boyle 2003: 44). In Boyle's view, one of the major outcomes of intellectual property laws' was an attempt to protect the commons and not to result in an infringement upon it (Boyle 2003). According to Michael Hardt and Antonio Negri in their 2004 book titled – Multitude: War and Democracy in the age of Empire – Hardt and Negri's hypothesis is in support of those of Boyle, Bollier and Lessig, who all are in agreement when they claim that "privatisation of the electronic 'commons' has become an obstacle to further innovation" (Hardt & Negri 2004:185). Hardt and Negri (2004) maintain that when "communication is the basis of production then privatisation immediately hinders creativity and productivity" (Hardt & Negri 2004:185). These sentiments echo what Lessig hypothesised earlier in this chapter pertaining to early intellectual property laws' insistence upon the limited terms of protection, which ensures that work passes into the public domain – also referred to as the commons – once a producer of that specific content has been suitably rewarded (Haupt 2008). Therefore according to Haupt (2008), the aim of intellectual property laws in this regard is to "balance the demands of producers with the public interest" (Haupt 2008:116).

This chapter examines traditional media's reaction to the exponential growth of digital media - specifically the Internet – over the last few years. The chapter goes on to document the migration from a centralised "broadcast" era of media and communication which is characterised by traditional or "old" media, to a concept of distributed "networked media" which has been facilitated by the rise of the Internet and digital media. This shift from a broadcast to networked model of media has redefined the concept of "information flow" (boyd 2010) within the information landscape which is defined by networked media , and refers to online consumers no longer behaving as passive consumers of information, but instead now living and immersed in a digital world where information is readably available everywhere (boyd 2010). The economics of centralised media is also discussed, and highlights the urgent need on behalf of traditional media companies to adapt their business strategies in order to ensure their longevity in a rapidly changing and dynamic new digital media environment where the emergence of distributed media characterised by consumers as producers in the form of UGC and facilitated by the Internet and open networks. Finally, chapter three concludes with the movement from a concept of an "open-web" to that of semi-closed platforms and the role large technology and telecommunications organisations are playing in facilitating this movement. The potential emergence of "walled-gardens" online is discussed as well as a scholarly understanding of how the Internet as an information commons must be protected (Benkler 2003; Bollier 2003; Boyle 2003; Hardt & Negri 2004; Lessig 2001). The chapter which follows will discuss in more detail the role of UGC as well as the various systems of production in terms of centralised and decentralised media online.

**Chapter 4:**

**The role of user-generated media within the digital world and how this affects traditional media: -** ***Collaboration, copyright protection and the Semantic Web***

4.1 The consumer as producer:

The emergence of user-generated content (UGC) websites such as YouTube, Flickr and Wikipedia, over the last ten years, provides a definitive example of the continuous blurring between the concepts of "media producer" and "media consumer" which exists on the Web today. The exponential growth of UGC online in recent years has unleashed a new media universe (Manovich 2009). At a practical level on the Web, this new media universe has been facilitated by free Web platforms and software tools which have enabled online users to create and share their own media as well given them the ability to access media produced by other online users on the Internet. It is important to distinguish that this new media universe is not simply a scaled-up version of the twentieth century media culture. Instead it signifies a movement from the concept of media to social media (Chan 2008). The concept of social media is inextricably connected to Web 2.0, the current version of the Web. Web 2.0 has been characterised since its development as facilitating a gradual shift from the majority of Internet users accessing content produced by a smaller amount of professional producers of content, to users increasingly accessing content which has been produced by other amateur users. Web 2.0 has also been responsible for creating a shift in terms of a Web which was identified traditionally as a publishing medium to one of a broader communications medium. This can be defined as communications between users, including conversations around UGC, which takes place through a number of mediums such as e-mail, online posts, comments, reviews, ratings, votes, links, photo and video (Chan 2008). What Web 2.0 enabled was a movement away from what before was ephemeral, transient, un-mapable and invisible in a Web 1.0 version of the Internet, to what has become a permanent, mapable and viewable within a Web 2.0 version of the Net (Manovich 2009). The emergence of social media platforms enabled users to make use of unlimited space online for storage as well as a number of diverse tools to organise, promote and have the power to more importantly broadcast their content and thoughts, opinions, behaviour and media to a wide audience.

However, a large amount of UGC which is generated online is channelled through traditional media organisations (Ornebring 2008). In the case of UGC websites such as YouTube, Flick and Wikipedia, users are invited and encouraged to create their own content and make that content available to a wider audience under the auspices of an established media organisation, most often via the website of that organisation. While there is a dearth of research or previous academic studies of UGC within a media context, there have been a number of studies on the broader area of user influence and interactivity within online media. Interactivity specifically has been a major area of research focus (Boczkowski 2004a;b; Chung 2007; Dibean & Garrison 2001; Massey & Levy 1999; Schultz 1999; Singer 2006). Interactivity is a fragmented and also a contested concept (Downes & McMillan 2000; Schultz 2000). Of particular usefulness however in the context of this study are the definitions of Steuer (1992) and Massey & Levy (1999), due to the fact that their definitions wholly encompass the UGC phenomenon online within a contemporary understanding (Ornebring 2008). Steuer's definition focuses on the online user's ability to "participate in modifying the form and content of a mediated environment in real time" (Steuer, 1991: 84). Specifically relating to the concept of media, Massey and Levy provide the definition of "content interactivity" and define this term as "the degree to which technology empowers consumers over content" (Massey & Levy, 1999: 140). Massey and Levy's definition places the concepts of power and control at the centre of the research agenda. Although certain traditional media organisations have been resistant to the idea of ceding power to consumers (Lasica 2002; Stromer-Galley 2000), others have found that while certain media organisations are resistant to user/consumer involvement in the content and media producing process, others are keen to embrace methods for additional audience and consumer involvement which would enable the ceding of absolute power of media production and gate-keeping power by large media organisations (Singer 2006).



4.2 Levels of user involvement: customisation versus production:

Various types of UGC describe different levels of involvement from online users. For example, being able to produce a video and posting it online requires additional work than customising an existing piece of content and posting it to be consumed online (Ornebring 2008). Alvin Toffler's concept of "prosumer" and "prosumerism" as well as his related work in terms of the distinction between the idea of customisation and production has been able to provide a sound theoretical

basis in analysing the levels of users' involvement online. In his 1980s book titled - The Third Wave - Toffler points to the idea that prosumerism results in the increased involvement of customers in the production process, which is typified through the use of customer feedback and direct design request within high-tech industries such as computer-aided manufacturing systems as well as the rise of customisation in both goods and services markets (Toffler 1980: 285). Therefore, Toffler's theory of prosumerism and the prosumer has two distinct aspects. These include the fact that the notion of "production for use", which refers to consumers who produce goods and services for their own personal use (Toffler 1980:285). Secondly, the customisation and customer involvement in a production process is still on the whole controlled and managed by someone else. Therefore customisation requires lower levels of involvement than that of production.

Customisation of content includes the ability to grade or mark various types of content which already exists online as well as having the power to directly comment on various types of content. In this instance, the online user has the potential to either not generate their own actual content but rather comment or add to existing content (which may then influence the content structure as well as design which can still be classified as a form of UGC), or generate relatively minor or limited amounts of content, such as brief comments as well as reviews. This form of UGC which has been described is characterised by a lower level of user involvement than described in the production form of UGC (Ornebring 2008). Production can be described as the other side of prosumerism, which refers to the actual production of content which can then be consumed by other users on the Web. This form of production can be exemplified as textual production in the form of blogs, blog posts on online forums, video and audio production as well as other user-produced content found online.



4.3 Various forms of content: information and entertainment:

A number of ways exist to classify content online. The differentiation between information and entertainment is a significant one and for the purpose of this thesis, the distinction between the above mentioned classifications makes use of Henry Jenkins definition in his 2006 book titled *Convergence Culture:*

> Right now, we are learning how to apply these new participatory skills through our relation to commercial entertainment – or, more precisely, right now some groups of early adopters are testing the waters and mapping out directions where many of us are apt to follow. These skills are being applied to popular culture first for two reasons: on the one hand, because the stakes are so low; and on the other, because playing with popular culture is a lot more fun than playing with more serious matters (Jenkins 2006: 264)

Jenkins makes the argument that most of the UGC that is produced online is in the sphere of popular culture and is focused towards commercial entertainment. Conversely, Jenkins's argument can be contrasted with the argument that Benkler makes in terms of the UGC of online users which are more orientated in terms of the information sphere of the content and activities which can be associated with traditional "Habermasian" public sphere activities such as debate, discussion, information provision and political action (Jenkins 2006). The argument can also be made in terms of media within the perspective of the "fourth estate". Considered as a fourth estate in democratic states, media are granted autonomy guarantees to ensure that media enterprises can produce content that are in no way influenced by any governmental agencies or societal groups (Hadland 2005). Within an online context, UGC produced by autonomous users online can be seen as an integral part of the fourth power of media in the twenty-first century (Weber & Grosz 2009). The over-arching difference between the argument that Jenkins and Benkler propose is one of degree rather than absolutes (Ornebring 2008). The various types of UGC have the potential to be relatively popular culture orientated or news/information orientated than other types of content, whereas other forms of content can also incorporate both popular culture and news/information components. An example of this is the rise of a news and entertainment website online – The Huffington Post – which has become an increasingly popular source of online news and information for users. The content for the site is contributed by online bloggers and writers who don't necessarily have an affiliation with a specific news organisation, but contribute content in their own capacity. However, usually once context of consumption and production will dominate the UGC process online. This does not however attempt to make the argument that news/informational content in terms of UGC online is more valuable or better than UGC which biases popular culture-orientated content created by users. However, it must be added that traditionally commercial and academic rhetoric and scholarship that addresses the discipline of UGC online describes that UGC production often empowers online users and citizens which allows citizens an increased amount of control over content as well as information

which has until recently being dictated and centrally controlled by large media organisations (Chung, 2007: 52f).

4.4 Systems of production: centralised or decentralised:

Centralised media currently, however, still continue to have greater resources, talent (in terms of professional and well known content producers) and political clout with regard to having the ability to lobby government to impose regulation and legislation on the media environment, amateurs in the form of UGC are finding their voices as well as new online vehicles to get their content published and taken notice of.

Creative expression need no longer only cater to traditional corporate gate-keepers and the demands of the mass-market. Due to the democratising impact that the Internet has had on traditional media structures, a no-name amateur now has the means and reach to produce a useful and influential work without having to go through the traditional gate-keepers of the old media hierarchy for the content to be seen or heard by others. The "do-it-yourself" culture that the Web has developed over a short period of time is continuing to flourish and expand online. Traditional media companies have been historically slow to acknowledge this new media production and distribution model which the Internet has been able to facilitate, but slowly these media companies are realising the potentially devastating threat this new model poses to centralised media.

Initially the threat to their business models were thought to be "piracy" of their content and material which they defended ferociously, but instead have suddenly realised that their biggest threat is in the form of non-market alternatives (Bollier 2008). Movie studios and record labels have long railed and rallied against "pirates" and have been vociferous in their calls for more stringent copyright protection for the content and material, but seemingly the real long-term threat to their business models and existence has come in the form of the migration of consumer attention to amateur, peer-produced, user-generated content and social communications which has been facilitated by the Internet and the social tools that constitute the Web. Social production on open networks has become a powerful creative outlet and subsequent economic force in its own right online. Anyone with access to a computer and Internet connection from anywhere in

the world can now find their own voices and develop niche cultures of their own that may or may not use the existing market.

The theory of the networked society (Castells 2000) is a psychology/economic theory made popular by Manuel Castells. There are a number of adaptations to the networked society theory by academics such as Van Dijk, Wellman, Hiltz-Turoff et al, but for this specific paper the theory adopted for this study will focus on Castells's definition. Castells claims that society is passing through from the industrial age into the information age. This epochal shift has been brought about by the advent of new information technologies, particularly those of communication and biological technologies (for the basis of this thesis, the study will focus on that of communications technology).

Communications technologies allow for the removal of space and the continued development of globalisation. The potential for rapid and asynchronous communication also has an impact on the relationship to time. Castells discusses further that networks are not a new form of social organisation but have become a key feature of social morphology (Castells 2000). This is the direct result of technologies such as the Internet, which allows for the decentralisation of operations and focuses of control, increasing the effectiveness of networks relative to hierarchical structures. According to Castells, power now rests in networks and in-turn networks have become the basic units of modern society (Castells 2000).



4.5 What motivates consumers to produce content online? – The rise of the "gift economy"

The "gift economy" refers to the things we do for each other without charge (Anderson 2009). As with the attention and reputation economies, this ephemeral gift economy has suddenly become explicit and measurable as the culture of producing content or material for free moves online. Bollier (2003) makes the point that due to the fact that many early ARPANET users were academics and scholars who had worked within a gift culture, it was inevitable that open standards would eventually be adopted within a virtual context (Haupt 2008). Therefore according to Bollier (2003), "the early designers of the ARPANET were, in truth, building a commons; a diverse community dedicated to shared goals and self-governed through a cooperative social ethos and informal decision-making forum" (Bollier 2003: 102). Lessig (2001) also supports this view, and adds that the Internet is a commons in three areas, namely;

code; knowledge, and innovation (Lessig 2001). The medium of the Internet was characterised as a commons of code and knowledge due to the fact that a large amount of software that was crucial to the development of this new technology was free (Haupt 2008). In this instance, Haupt (2008) refers to the programming approach that enabled online users to view the source code that was written by computer programmers in order to develop the software in question. This approach can also be referred to as open code, free software or open source software (Haupt 2008).

In a traditional media business, the people who produce or write material get paid. But within the online environment, excluding a few websites that still pay traditional writers for their content, things have changed dramatically. The latest statistics to be analysed online, count that there are twelve million active blogs, individuals or groups of ordinary people writing and producing content that is shared online for free at least once a week, generating billions of articles on a range of subjects and issues (Anderson 2009). This phenomenon of fellow users of the Internet producing content for free can be seen everywhere on the Web. From e-commerce site Amazon.com's amateur product reviewers to the film lovers who have made the Internet the most comprehensive source of film and filmmaker information in the world. The content created and posted online can take the shape of informal posts in the support groups of countless discussion forums on a range of topics, but can also include projects that took the user weeks or months of work, such as detailed user-created video game guides and catalogs of vintage model car collections or Star Wars memorabilia. The Web is full of "completionists" who truly enjoy becoming the world's foremost experts on something that interests them and then having the ability and power of communication to share it with the world.



But what motivates these amateur writers and experts to provide content online for free? Simply the answer is self-interest. People do things for free mostly for their own reasons; for fun, because they have something to say and want people to hear it, because they want people to pay attention to them, because they want their own unique views to gain currency with their peers or online community and a host of other more personal reasons. In 2007, Andy Oram, an editor at O'Reilly Media in the North America was amazed to find the amount of user generated documentation found on the Web and wondered what motivated people to provide this content for free to others. He conducted a survey for a year and then analysed the results. The main

reason was "community" - people felt part of a community and wanted to contribute to its vitality. The second reason was "personal growth". The third reason was mutual support which suggests that many of the contributors of content online are what sociologists call "mavens" – people with knowledge who enjoy sharing it with others (Anderson 2009).

Taking the concept of the gift economy into account, it is no coincidence that the Web expanded the way it has over the years, driven by volunteer labour and contributors. It has made users happy to be creative, to contribute, to have an impact, and to be recognised as an expert in some field. The potential for such a non-monetary production economy has been present in our society for centuries, waiting for the social system and tools to emerge to fully realise it's potential. The Web provided those tools and suddenly a market of free exchange of content and information arose. In his discussion in terms of the Internet as an innovations commons, Lessig argues that end-to-end (e2e) architecture ensures that "intelligence in a network is kept at the ends - or in other words – in the applications, which leaves the network itself to be relatively simple" (Lessig 2001: 34). In turn, this simplicity within the network allows for more intricate applications to run on top of the basic structure in place – or for more complex data to be able to be transported across networks, thereby enabling the Internet to be a flexible medium (Haupt 2008). Lessig continues on to make the point that e2a is vitally important to the Internet's success and has sweeping policy implications due to the fact that its design has "intimately affected the freedoms and controls it has enabled" (Lessig 2001: 35). At the Internet's essence, the medium has been built in such a way that "to remain open to whatever innovation comes along" and in effect, anyone is free to "develop and deploy new applications or content without the permission of anyone else" (Lessig 2001: 40). Lessig firmly believes that "free code builds a commons" which "in turn lowers the cost of innovation" (Lessig 2001: 57).



4.6 Everyone is now a media outlet:

The nature of the Internet and the social tools that characterise it has removed previous obstacles to public expression and, in so doing, removed the challenges that have always characterised mass media. The result of this democratisation of public expression has led to the "mass amateurisation" of efforts previously reserved for media professionals (Shirky 2008). The biggest threat currently to traditional media, which includes T.V., radio, newspapers and

magazines, is not competition from other rival networks, stations or publications, but in the radical changes in the overall ecosystem of information (Shirky 2008).

Many, if not all of the old, traditional media companies in the world have missed the significance of the Internet. These old monolithic companies have found it difficult to grasp how content found online that isn't professionally produced could affect them in such profound ways. Old media companies are guilty of harbouring a sense of self-importance bordering on narcissism among them as they believed the only threat to their businesses would come from other rival professional media businesses. This bias has had them watching their traditional competition closely and in so doing ignored the biggest threat of all to their businesses and business models, which has the rise of user-generated content and the culture of "free" which has been facilitated by the Internet.

As websites and online businesses such as eBay and Craigslist are continually siphoning off advertising revenue that is the basis of the sustainable economic model for newspapers (these include classified advertising, job and real estate listings, and so on), blogs were allowing online users and once passive consumers of media content, to publish their own user-generated content to the rest of the Web for absolutely free. While this change in media structure and content distribution was taking place and gaining momentum, centralised, old media executives of some of the biggest newspaper companies in the world were slow to understand and grasp the changes that were occurring in their business environment and were even slower to react to these changes.

The business theory of these media executives were consistent with twentieth century thinking, that a profession exists (such as news reporting and newspaper publishing) to solve a difficult problem, one which requires a certain degree of specialisation. Part of this psychology also believes that most if not all professions exist because there is a scarcity of resources that will require ongoing management. In the case of the newspaper business, the scarcity of the resource itself creates the need for a professional class (Shirky 2008). In the newspaper publishing business, the professionals (i.e. the journalists and editors) became gate-keepers, who simultaneously provided and controlled access to the information, communication, entertainment and any other form of news.

In the case of newspapers, professional conduct or behaviour is guided both by the commercial interests and by an additional set of values regarding what newspapers are, how they should be staffed, their culture and what to that specific publication would constitute good journalism. These types of values and behaviours are not dictated or forced by the consumer, but instead by the media professionals in the newspaper business. The key to any type of profession is the relations of its members to one another. In other words, in a profession, members are only partly guided by the concept of serving their public or audience. University of California Los Angeles (UCLA) sociologist James Q. Wilson refers to a professional as someone who receives important occupational rewards from a reference group whose membership is limited to people who have undergone specialised, formal education and have accepted a group-defined code of proper conduct (Wilson 1989).

A professional learns things in a manner that differentiates them from most of the population and they tend to pay a significant amount of more attention to the judgment of their fellow professional peers in comparison to the judgment of their consumers when planning how to go about their job or task. Therefore, professionals begin to see the world through a lens that is created by other members of their profession (Shirk 2008). An example of this phenomenon is when a journalist is honoured with an award such as the Pulitzer Prize. The recognition and honour bestowed on that journalist comes from their fellow professional journalists.

Most of the time, the internal consistencies of professional judgment is a positive outcome. Not only does this encourage a high standard of competence in the specific field, which is enforced by other members of the same profession, but also constitutes the exact definition of professionalism. Conversely however, the professional outlook can sometimes become a disadvantage, preventing those who have the most at stake, the professionals themselves, from clearly understanding major changes to the structure of their profession. In any type of profession, in particular one that has existed for a long period of time, members have a tendency to equate provisional solutions to a set of specific problems or challenges which has deep truths about the world (Shirky 2008).

This is consistently true for newspapers and traditional media in general. The traditional media industry has felt the effects over the past few years due to the collapse in communications costs brought about by the Internet. In the past it was difficult to have the ability to move words,

images, and sounds from the creator of that content to the consumer or end-user. Most, if not all old media businesses involve complex and expensive management in terms of managing the flow of content or material from creator to consumer. In return however, for overcoming these issues, traditional media businesses were able to exert a considerable amount of centralised control over the media environment and extract vast amounts of revenues from the public and consumers who would interact with their content.

The sustainable commercial viability of most old media businesses involves providing those types of solutions, so preservation of the original challenges became an economic imperative for those media companies. However, because of the immergence of distributed media which has been facilitated by the Internet and the Web, the challenges of production, reproduction and distribution of content and material are in today's current media environment, far less of a challenge. As a consequence of these factors, control over the media environment is far less completely in the hands of the professionals anymore. Due to the Internet and the power of the Web, digital means of distributing words and images have taken away the power and leverage newspapers had, revealing only the physical object of the actual newspaper, as a merely provisional solution. Because of the advent of digital, every single article is now its own section, instead of just one report which traditional newspapers used to offer their consumers.

These technological developments and innovations which have taken place over the last few years raises the important question of how this new digitally connected society will be informed of the news in the future. In the past T.V. and radio also changed the way in which newspapers operated, but even when that occurred when newspapers and printed news still enjoyed a monopoly on the written word. But nothing could have prepared newspapers for the revolutionary power of the Internet. The Web didn't just introduce another competitor for newspaper publishing into the old media business ecosystem. The Web has created a brand new ecosystem of its own.

The challenges that mass amateurisation in the form of user-generated content poses to traditional media, is the outcome and ramifications of what happens when the cost of reproduction and distribution go away. Clay Shirky asks the question in his 2008 book titled - Here Comes Everybody: The power of organizing without organizations. Shirky questions what will happen when there's nothing unique about publishing anymore due to the fact that users will

be able to do it for themselves (Shirky 2008). As newspapers around the world continue to shut down operations and some of the most well-known publications such as the *Wall Street Journal*, the *Washington Post* and the *New York Times* continue to haemorrhage money due to archaic business models, Shirky's rhetorical question is beginning to be answered.

4.7 Peer-to-Peer file-sharing:

The constant rate of development within the consumer digital era which has transpired over the last decade has brought with it a steady restructuring to traditional content industries, which have seen the traditional business of old media being slowly eroded by smaller, faster and innovative players within the new digital media environment. Online file-sharing businesses such as Napster, then followed by Kazaa, eMule and Bittorent have all entered the online media environment in the previous few years, all experiencing differing levels on controversy along the way (Liebowitz 2005; Peitz & Waelbroeck 2005).

In response to the constant rate of innovation that occurs online, traditional media companies have developed a common, myopic rhetoric about the damaging effects of new technologies and innovations which occur within an online environment, specifically around the "controversial" debate pertaining to peer-to-peer (P2P) file sharing (Klimis & Wallis 2009). The majority of P2P definitions which have been cited in the past have related more to marketing than with the actual technology of what P2P is able to facilitate. At its most fundamental level, P2P simply implies that multiple pieces of software work together directly as "peers" rather than as "clients" that need a centralised server to assist in processing information (Bryan & Jennings 2006: 36). From an architectural perspective, P2P is the opposite of client/server; however P2P applications can be indistinguishable from more traditional applications. It is more accurate to view P2P as a philosophy of reducing or eliminating the need for central servers, rather than as a particular, clearly defined architectural approach (Bryan & Jennings 2006). A contemporary definition of the term P2P is more often used in the reference to end-user applications that have the ability to be able to communicate with one another or have the capabilities to collaborate among themselves without little to any involvement from centralised servers (Bryan & Jennings 2006). P2P file-sharing among online users has been identified by traditional media companies, specifically in the case of the music and film industry, as a major agitator in the loss of sales and revenue that "steal money" from media companies as well as in the case of the music industry,

the artist who are responsible for the creation of the content being shared online as well. Academic studies in to the role that P2P file-sharing plays in the loss of revenue for media companies online has been extensive. Making use of diverse methodologies and research samples, researchers have concluded varying outcomes pertaining to the effect that P2P file-sharing and its associated technologies have had on the media industry, in specific reference to the music and film industry. Academic scholars, such as Liebowitz (2005), maintain that the practice of P2P has a detrimental effect on the media industry as online file-sharing activity directly erodes the sales and revenue of media companies, more specifically so within the music industry (Liebowitz 2005). Conversely, academic scholarship conducted by Oberholzer-Gee & Strumpf (2005) as well as Blackburn (2004) maintain that the effect of P2P on traditional media companies online is negligible at best (Oberholzer-Gee, et al). Blackburn hypothesises that in fact, P2P file-sharing has had a beneficial effect on artists and other media content producers specifically in the case of making previously unknown artists and content producers more mainstream through the practice of file-sharing online (Blackburn 2004). The motivation for online users to make use of P2P file-sharing has also been researched. Studies conducted by Leitman (2004) has revealed that online consumers have exhibited a relatively low inhibition for downloading and sharing content with other users online (Leitman 2004). The research conducted attributed this lack of inhibition on the part of file-sharers due to the fact that variables such as high prices for the actual content, mistreatment of artists and content producers and large traditional media company profits all factor in to the reasons and motivations which pursued online users to make use of P2P file-sharing online (Leitman 2004). An additional contradiction to the resistance of P2P file-sharing among traditional media organisations is that the major telecommunications companies who are responsible for providing Internet access and broadband capabilities to consumers have experienced exponential growth in broadband traffic within their networks and service providers due to the fact that P2P file-sharing activities among users online contribute to a large proportion of Web activity on the Internet (Glasner 2005).

The next generation of the Internet which has been outlined in this thesis – Web 3.0 – has the potential to develop into a ubiquitous (some say pervasive) medium of communication. However, due to the Internet's decentralised nature and relatively weak support for a Semantic Web from an architectural standpoint, the Internet still remains a chaotic repository, which lacks the ability to allow users to discover, extract, and integrate information of interest from

heterogeneous sources, and its ability to be able to provide these users with efficient tools to be able to manipulate and convert the discovered information into knowledge (Sangpachatanaruk & Znati 2004). The ability of P2P overlay technologies which have emerged online over the past few years have the ability to leverage resource discovery on the Internet by being able to provide a scalable framework to develop efficient mechanisms to distribute, share, and access resources within a large scale and in highly dynamic environments. P2P overlay technologies therefore have the potential to enable and facilitate a personalised web architecture which would enable structured Internet resource access and knowledge sharing capabilities between community members online (Sangpachatanaruk & Znati 2004). The personalised web architecture would be able to use an ontology-based representation of the resources to enable a Semantic resource discovery and access that would reflect the personalised interests of the user (Sangpachatanaruk & Znati 2004).

4.8 A history of disruptive technologies:

A disruptive technology on the Internet such as P2P file-sharing has always had the potential of creating new controversy. Traditional media and content companies have always been resistant and reluctant to any threat of change to the status-quo and have been particularly hesitant and averse to the threat of disruptive technology (Kusak & Leonhard 2005). Debate and argument over previous forms of disruptive technology have been made for decades. Within the digital era, the first case of traditional media making use of legal intervention and government legislation was in the case of an online P2P music file-sharing website - called Napster - in which traditional music companies forced the close-down of the website and start-up business. By successfully shutting down Napster, the traditional media industry then set their sights on other technology companies which existed online such as Kazaa and Grokster trying to convince the legal system that the technology being used by these new media companies were illegal and completely detrimental to the traditional media companies' business interests (Samuelson 2005). The major reason which contributed to traditional media adopting such litigious and strong armed tactics against new media companies online was done with a distinct purpose of attempting to gain time to be able to then adjust their own business models with the desire to then attempt to exploit the very technology themselves similarly in the way that Hollywood was able to successfully do with the videotape (Klimis & Wallis 2009). For example, in the case of Napster, once the record

companies were able to successfully shut down the site, the very same music companies then resurrected the same technology that Napster had developed and now make use of their own digital networks and file-swapping opportunities via P2P technologies (Samuelson 2005).

In addition to traditional media companies' attempts to hinder the use of disruptive technology by new media companies on the Internet, online users themselves have not been immune to the reach of traditional media in attempting to limit consumers from making use of P2P file-sharing. Traditional media, specifically within the music industry, have attempted and have subsequently been successful in moving beyond simply blocking technology by also taking individual online users who make use of P2P file-sharing to court, placing an increased focus on legal action against random choices of individual users, thereby being able to maximise fear among online users through creating uncertainty about what the media industry knows about that specific individual and there online activities as well as more nefariously, placing the fear of whether users will be the "next person" to be caught and summonsed to court due to their P2P file-sharing activities (Klimis & Wallis 2009). This specific strategy employed by traditional media companies has had the specific objective of stopping individual online users from downloading and swapping copyrighted material through the process of P2P file-sharing. This development continues to pose a threat to the way consumers and users of the Web are able to interact with and consume content online, especially via a P2P model of content sharing and creation. Traditional media companies have also amassed large repositories of copyrights by an oligopoly of publishers/content producers, record labels and film studios, which has resulted in a litigiously led stifling of creativity and content production online via UGC and which is shared around various online communities and networks via P2P. The focus on copyright has subsequently led to a concentration on the behalf of major copyright holders of content, on protecting their existing "rights", instead of developing a focus on having the ability to create new innovations and content creation. Due to this fact, coupled with a legal approach which focuses on continually extending the period of copyright protection for content online has led to the large scale exploitation of rights by traditional media companies with very little benefit for online users and new creators of content on the Internet (Klimis & Wallis 2009). These developments could potentially prove to be a stumbling block in the future development of the Web and the Internets ability to develop into a functional Semantic Web offering.

4.9 Shifting structures of regulation:

Within the twentieth century, the concept of structural media regulation determined the tinkering with the configuration of a mass media market. As an example, group ownership and duopoly rules, licensing criteria such as diversity and localism, financial interests and syndication rules, or cable access rules, took the simple structure of mass media markets as given, and attempted to make certain that this basic structure was able to deliver more diverse content than it would be able to if it was left to its own devices (Benkler 2001). Now, within the twenty-first century, technology provides the platform for the potential realisation of decentralised and democratised media through the enabling of small groups of communities and individuals to have the power to become producers. These users can be classified as having the potential to be participants in the production of their information environment rather than simply regulating concentrated commercial mass media content to make them better serve individuals who are conceived as passive consumers. The concept of structural media regulation in the twenty-first century must therefore according to Benkler (2001) focus on empowering a wide distribution of the capacity to produce and disseminate content and information as a more effective and normatively attractive approach to be able to better serve the goals that have traditionally made up structural media regulation (Benkler 2001).

As digital networked environments mature as the Internet continually develops and evolves, regulatory choices abound that implicate whether or not the network will be one of peer users or one of active producers who serve a "menu" of pre-packaged information and content to consumers whose role is limited to selecting content and information from this menu. According to Benkler (2001) these choices occur at all levels of the information environment. These levels include; the physical infrastructure layer which includes wires, cables, and the radio frequency spectrum; the logical infrastructure layer which includes software; and finally the content layer (Benkler 2001). Within the physical infrastructure layer the regulatory choices can be seen in the question of open access to broadband services as well as the stunted availability of license-free spectrums. Within the logical layer, policies such as the Digital Millennium Copyright Act[2]

[2] The DMCA is a United States of America copyright law that implements two 1996 treaties of the World Intellectual Property Organization (WIPO). It criminalizes the production and dissemination of technology, devices or services intended to circumvent measures (commonly known as digital rights management or DRM) that control

(DMCA) as well as technology control litigation which followed on from the implementation of the DMCA, as owners of copyrighted works and content attempt to lock up the technology and software layers on the Internet so as to ensure that they control all valuable uses of their own work. And finally within the content layer the attempted enclosure movement which has been aimed at the enabling of information vendors to have the power to capture all the "downstream" value of their own information. This attempt at enclosure has led to the incremental rise in cost of becoming a user, rather than a consumer of information online and also undermines the potential of becoming a producer/user of information and content for reasons other than that of profit, by means other than sales (Benkler 2001).

Given the large scope of the problem, a number of movements have emerged over the last few years with the purpose of attempting to mitigate copyright infringement on the Internet. Certain copyright orientated solutions attempt to make use of digital tools and legal action to attempt to prohibit copyright infringement online. Another movement, referred to as the "copyleft" movement seeks to build a richer public domain and change the assignment of rights from the automatic "All Rights Reserved" to a greater egalitarian option which makes use of a "Some Rights Reserved" philosophy (Broussard 2007). At the driving seat of the copyleft movement is the "Creative Commons" (CC), a Web-based intellectual property sharing organisation which has been developed by a consortium headed by Professor and legal scholar Lawrence Lessig. Based on existing copyright law, the CC licenses cover and apply to all works which are protected by copyright law. CC licenses also incorporate legal themes of both property and contracts (Elkin-Koren 2005). According to Dusollier (2006), CC licenses effectively illustrate the parable of the "Master's Tools" being used to disassemble the "Master's House" (Dusollier 2006:36). Very similarly to Digital Rights Management (DRM) software, CC licenses attach to the work, however unlike DRM, CC licenses are able to authorise everyone who comes in to contact with the specific work or content, and affords them the ability to use that work or content as long as it is consistent with the CC license (Dusollier 2006). There are six basic CC licenses in



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access to copyrighted works. It also criminalizes the act of circumventing an access control, whether or not there is actual infringement of copyright itself. In addition the DMCA heightens the penalties for copyright infringement on the Internet. (http://en.wikipedia.org/wiki/Digital_Millennium_Copyright_Act)

place with an additional three new music-related licenses also being introduced by the CC recently.

The CC and the copyleft movement are particularly popular among legal scholars and Internet enthusiasts. However according to other media academics such as Elkin-Koren (2005), CC and the copyleft movement's reliance on private-ordering is both a "pro" and "con" when addressing the issue of copyright within a digital environment. According to Elkin-Koren, who defines the concept of private-ordering as self-regulation, voluntarily undertaken by private parties (Elkin-Koren 2005), Elkin-Koren questions the validity, stability and sustainability of the movement's reliance on viral contracts, which refer to contracts which are embedded in programming and forwarded to and through each user. Elkin-Koren hypothesises that when the CC has to rely on property rights to advance their strategy, it reinforces the proprietary regime of control (Elkin-Koren 2005). Supporting academic literature has also supported the limitations of the CC and copyleft approach as a solution to copyrighted material infringement online. Katz (2006) notes that a lack of software standardisation and license incompatibility as the primary drawbacks for the CC and copyleft solution (Katz 2006). Additionally, the fact that CC has several derivations, licensing and restrictions can potentially grow exponentially, which could result in incompatibility between various CC licenses (Broussard 2007). Dusollier (2006) also identifies a fundamental ambiguity in the CC and copyleft ideology. Dusollier maintains that by attempting to ground the justification for a CC license with the expectations of the users rather than in the desires of the creators, the agenda of the CC is to make the norm of free access to works the norm of a free culture, and the politically correct way for a creator to exercise their rights (Dusollier 2006). It must be stressed however that CC licenses do not automatically make media content "free" within commercial terms. The CC offers instead flexible licensing options to its users, but does not preclude the creator/producer from exploiting the work in question commercially. In some instances, commercial players have elected to make some content available under a CC non-commercial license, whilst locking down other aspects of their work/service under an "All Rights Reserved" policy. In addition, CC licensed work can also be sold and resold, depending on the agreed licensing terms. In essence, CC agreements are fundamentally concerned with protecting free speech than in restricting commerce (The various types of CC licensing options will be discussed later in this chapter).

The implementation of CC and copyleft licensing is clearly a polemic debate among media companies, consumers as well as academic scholars. The use of CC is and should not be seen as a silver-bullet to the controversy of online copyright challenges. In addition, neither to the lag between Internet online user practice and behaviour and the law nor between the lag between technological advancement and the law (Broussard 2007).However, what CC allows is for copyright owners to be given a choice between All Rights Reserved and No Rights Reserved, with the Some Rights Reserved approach to copyright online much more in tune with the way online communities behave and operate. CC licensing therefore does not compare to copyright, but should be viewed as a derivative of copyright (Broussard 2007). CC forms part of the copyleft movement that has developed in recent years in direct response to the traditional media and entertainment industry's paralysing influence over intellectual property laws around the world.

According to Benkler (2001), within the digitally networked environment, a better way exists to serve the goals which have long defined and justified structural media regulation. Benkler believes that this environment could be designed on a widely distributed model, which would empower individuals as well as small communities and groups to express themselves, have the ability to exchange views as well as to create their own information environment with a reach and form of efficiency which was once not possible within a mass media model. One of the major contributing factors according to Benkler - which are responsible for this shift in the capacity to be able to produce the information environment - are the drastic reduction in the overall cost of processors and the flat distributed design of the Internet (Benkler 2001). In combination these results, in relatively cheap end points within a network, namely computers, which can produce fairly sophisticated communications, as well as access to the Internet, and have the power to disseminate them practically anywhere on the Internet. In terms of architecture, the Internet has no centre to control. From an economic perspective, the relatively low cost of producing and sharing and communicating information has resulted in old points of concentration, which are characterised by the presses and distribution systems; the broadcast transmitters and licenses as well as the cable systems, now no longer present the same large barriers to entry in terms of individuals or communities attempting to find their own voice or producing their own content as they once did within a traditional media environment. On the surface, according to Benkler (2001), this suggests that the emergence of the digitally networked

environment has the potential to introduce a non-regulation approach. The traditional mediated media environment no longer is the only source of broad information exchange which exists in the new digital era. The new alternative, which can be referred to as the digital networked environment, does not feel the stifling affect of the structural imbalances that traditionally would dictate regulation.

However on closer inspection, Benkler (2001) suggests that the opposite is actually in the process of taking place. Regulatory choices at all levels of the information environment on the Internet are currently being made. These levels include the physical structure, the logical structure as well as the content structure of the Internet, which all threaten to concentrate the digital environment as it continues to develop and become more central to societies social conversation which is facilitated by the Web. The regulatory choices which Benkler alludes to are decisions about property law, which can make ownership of content a point of re-concentration, decisions about the design of software and its standards as well as the regulation of the physical infrastructure available to Internet communications, such as broadband services (Benkler 2001). At all the various layers mentioned above, the wrong decision could have the potential to enable a reproduction of the old traditional media model, which is riddled with shortcomings, and threaten to reproduce those very same shortcomings within the digitally networked environment. According to Benkler, avoiding making these same mistakes within the digital networked environment must be the main focus and given the same amount of time and attention which has traditionally been spent on structural media regulation (Benkler 2001).



4.10 A movement to a "commons" and ubiquitous access:

According to Benkler, two main areas of focus should be the main imperative goals to ensure the commitment to enable the development of a network of peers on the Internet (Benkler 2006). The first is a commitment to identifying and also sustaining a series of commons in the resources necessary for the production and exchange of information on the Web. The second is a shift in the focus of the distributive policies from low cost to free reception as well as ubiquitous access to the tools necessary for production and dissemination of information and content online (Benkler 2006).

A dynamic public domain in existing information and in various creative uses of copyrighted or otherwise exclusively owned information and content similarly is not intended to displace professional commercial production. Its role however, is intended to facilitate that sufficient cultural "raw material" is made available to non-professionals for the purpose of reworking, so that various users can have the ability to create their own content and expression as well as being able to fairly and effectively contribute in the production of their own information environment (Benkler 2001).

The development of the digitally networked environment according to Benkler (2001) allows for the potential of the development of a robust, open social conversation in which all users can have the power to be able to participate in as peers (Benkler 2001). This technological and economic utopian vision is not a guarantee however. The decisions about the organisation and regulation of the content, logical, and physical layers of the Internet which Benkler describes will have the potential to fully determine whether the current digital environment will eventually within a large scale, begin to replicate a traditional media model, or in fact whether it will change the deep structure of the information environment. The traditional focus of policy concerns which have in the past justified structural media regulation should, according to Benkler, be focused on assuring that the digitally networked environment can evolve into a stable system of peer users, instead of a system which is characterised by commercial producers and passive consumers. This desired outcome proposed by Benkler suggests that a sustainable commons needs to be developed wherever possible, in the resources necessary for the production and exchange of information as well as provisions being designed which enables access to the resources that cannot be sustained as a commons (Benkler 2001). The implementation of these types of policies according to Benkler would be more of an effective method than traditional structural media regulation of securing robust and dynamic discourse and individual expressive freedom (Benkler 2001).



4.11 Collaboration, copyright protection and the Semantic Web:

In contrast to the framework which has been described above - in which collaboration arises implicitly from the integration of external sources - which is characterised by a Web 2.0 system and architecture on the Internet, and explicitly involves collaboration among users, online users on a Web 2.0 version of the Internet are able to create content and, from the sum of these

individual activities, various structures have been able to emerge. Within a Web 2.0 architecture, content is by and large "walled communities" which make it very difficult for the majority of users on the Internet to have access to that information and content as well as having the ability to share that content with others online. As the Web evolves to the concept of Web 3.0, and in the context of the Semantic Web, notions of user collaboration, interoperability and the reuse of content are intrinsically interrelated. Interoperability on Web 3.0 implies reuse, which in turn is a form of user collaboration (Staab 2008). The vision of the Web 3.0 also referred to as the Semantic Web will evolve essentially into a medium for knowledge exchange, in which the knowledge produced by one user can be consumed by another individual user or community, and in turn can possibly be used to create new knowledge and meaning from that original existing piece of information or content.

As described above, the restrictions and subsequent hindrance of copyright issues online faces major challenges due to Information Technologies on the Internet. The evolution of the Internet to a Semantic version of the Web offers the opportunity for a "Semantic Copyright" which would enable the Web to achieve a better recognition of copyright in the context of the Information Society on the Internet, which would in turn provide more information and content on these rights incorporated in various digital archives, improving their access for users, their use and distribution as well as providing egalitarian legal guarantees for all parties on the Web (Prenafeta 2010).

The attempts to regulate online user behaviour as well as the production of UGC online by users through the implementation of new laws and legal legislation, through the market, the regulation of supply prices of certain goods and contents, or through tacit social norms have been well outlined in this thesis. Within this context, the ease of disseminating content and information globally on the Internet, along with the aforementioned factor of distributions with different levels of authorisations, has clearly exposed gaps and the needs that Information Technology, which the evolution of the Internet from the current Web 2.0 version of the Net, to a Web 3.0 version of the Internet would potentially be able to facilitate. In the current Web 2.0 version o the Internet, existing digital networks do not have the ability to distinguish between copyrighted work and other work or content that can be freely and openly be distributed ,and at the same

time, respecting specific conditions put in place such as licenses or works which exist in the public domain (Prenafeta 2010).

4.12 Semantic Web copyright:

Computer systems which facilitate the access as well as the distribution to digital content are not by definition in themselves "legal" or "illegal" as they are unable to determine if those specific contents are protected by any form of intellectual property rights, and if so, which uses are allowed, for example, by law; by license or because the works fall into the public domain, and which are not. Due to the fact that DRM systems have been determined to be a technology that restricts consumers' rights, and as a result being socially rejected by society, it is fundamentally important that a new model which supports and provides greater emphasis on information on intellectual property rights, rather than a scheme that does not work as rights holders expected in the beginning, be adapted. In addition, DRM software can also play a more nefarious role in consumers' lives in the form of exposing users' computers to security threats. An example of this came in April 2007, when Sony BMG settled a U.S. Federal Trade Commission suit regarding its CD DRM software that not only limited access, but also monitored usage and fed information back to the company for marketing purposes (Broussard 2007). The use of Semantic technology which would be facilitated by the evolution of the Internet to Web 3.0 has the potential to be applied in copyrighted works which would provide less of an intrusive and controversial manner than that of the existing DRM system.

The capabilities of HTML, which focuses mainly on the display of Internet content, appears to be a limited programming language in terms of the categorising of elements which circulate on the Internet, which results in a narrow understanding of the contents and data by machines and software applications on the current version of the Web (Prenafeta 2010). As the Web continually evolves into a Semantic version, the development of a supporting structure of a Semantic Web RDF in conjunction with the SPARQL query language as well as the definition of OWL concepts which is facilitated by a Semantic Web, will make it possible to define as well as manage the distribution of contents on the Internet with a full compliance with copyrights, including CC and P2P networks (Prenafeta 2010).

Existing copyright policies should also in the future focus on the contents rather than on controlling the network, due to the fact that it is increasingly challenging to have to legally attempt to prosecute all copyright "offenders" as well as because these technologies are not illegal themselves in most countries around the world. The current need on the Internet is for further progress and innovation in the direction towards a self-acting knowledge of content. The evolution towards a Semantic Web will allow for users to be able to delegate tasks. This means that metadata can be associated with work, its title, author or right holder and intellectual property rights involved, combining query languages and applications, the use or diffusion of those contents over the Internet can be controlled through authorising or denying access to that content. As the Internet develops into a Semantic Web, software applications will have the ability to be able to process the content, understand it, and be able to perform logical deductions to solve everyday problems which are experienced automatically (Prenafeta 2010).

The possibilities of the Semantic Web are progressing in line to be able to interpret information on Web pages characterised by RDF and OWL. In this sense, this will allow for the investigation towards the interpretation of intellectual property rights concerning digital content found on the Internet through the process of ontology formats (Prenafeta 2010). In order for a Semantic Web copyright system to be developed on the Internet the standardisation of ontologies and Semantic information which are related to copyrighted works needs to be contrasted with existing copyright movements such as the copyleft and CC initiatives on the Web. The standardised ontology, which would include information on basic intellectual property rights, such as display, reproduction, public performance, communication, distribution and transformation rights, commercial or non-commercial uses and attributions, would be able to be applied to works licensed by the most common systems as CC licenses or General Public Licenses (GPL) which will enable them to inform users about permitted uses. A GNU General Public License, a GNU Free Documentation License, or other similar labels are the product of a content or software producer who takes part in the copyleft movement (Broussard 2007). GNU licenses are developed by and accessed through the Free Software Foundation. The general public license is for software and the general documentation license is for general content. The most well known example of free content offered under the copyleft ideal is Wikipedia, which uses the GNU Free Documentation License (Broussard 2007). There are six basic CC licenses and an additional three music-related licenses; each one is represented by a graphical element which illustrates the

permission granted by the author and each of which is backed by contracts in the three formats, which include; human-readable; lawyer readable; and machine readable. The current CC licenses include:

- **Attribution Non-commercial No Derivatives (by-nc-nd) –** This is the most restrictive license allowing redistribution. It allows others to download works and share them as long as they mention and link the new work back to the author.

- **Attribution Non-commercial Share Alike (by-nc-sa) –** This license lets others use, change, or have the ability to build upon work non-commercially as long as they credit the author and license their work under identical terms. Any derivatives will also be non-commercial.

- **Attribution Non-commercial (by-nc) –** This license lets others use, change, or build upon work non-commercially as long as they credit the author. They do not have to license their derivative works on the same terms.

- **Attribution No Derivatives (by-nd) –** This license allows for redistribution, commercial and non-commercial, as long as users pass along the work unchanged and in whole, with credit to the author.

- **Attribution Share Alike (by-sa)** – This license allows others to use, change, or build upon work for commercial reasons, as long as they credit the author and license their new creations under identical terms. All new works will carry the same terms, so any derivatives will also carry commercial use.

- **Attribution (by)** – This is the most accommodating license available. It lets others use, change, or build upon work commercially, as long as they credit the author (CC "Creative").

- **Sampling** – This license allows others to use and have the ability to transform pieces of a work for anything other than advertising. Copying and distribution of an entire work is also prohibited.

- **Sampling Plus** – This license allows others to use and transform pieces of a work for anything other than advertising. Non-commercial copying and distribution of the entire work is also allowed.

- **Non-commercial Sampling Plus** – This license allows others to transform pieces of a work for non-commercial purposes only, including the entire work (CC "The sampling").

(Source: Broussard 2007)

According to Haupt (2008), the implementation of the GPL and CC agreements where developed in response to the process of the enclosure of the commons (Haupt 2008) and what Boyle (2003) refers to as the second enclosure movement (Boyle 2003). Lessig (2001) maintains that the implementation of CC agreements was developed to restore the balance in copyright law – that is, the balance between the rights holders and the public (Lessig 2001). The balance which Lessig refers to has been upset by copyright terms extensions, the DMCA as well as multi-lateral agreements on IP protocol.

The proposed Semantic Copyright platform outlined above will need to be embraced and formed by public institutions, organisations and individuals on the Web with the main goal of promoting the protection and dissemination of safe content on the Internet, legally and by providing guarantees for both creators and rights holders of content, as well as individual users of the copyrighted works in question that are available on the Internet (Prenafeta 2010). For the creators of content on the Internet, increasing the protection of moral rights which should belong to every author of content, online, needs to be assured. This refers to the systems and tools such as content-sharing systems, office applications, web browsers and viewers of content which will be able to provide reliable and up-to-the-date information about the authorship of the work, its title, year of publication, as well as including additional metadata as tentative topics or keywords online. For the rights holders of content, providing reliable information on the exploitation of rights will enable them to be able to control and better monitor compliance with them in the digital environment which will allow for the personalised and automated function, through the process of systems and software, based on the rights holder's preferences and desires (Prenafeta 2010). This will result in, once the Semantic Web copyright system is properly implemented, restrictions or permits may be articulated based in the terms of use of the specific content, as

defined by the rights holders in each time. Thus, any rights holder will have the power to authorise the reproduction of a particular file, as well as its distribution or transmission and also prohibit that action(s) if so desired for whatever reason. Thanks to the proposed Semantic Web copyright system, the protection of content is located in the actual work itself and not as is currently the case by protocol.

In the case of the individual online user, the main advantage and improvement in the use of a Semantic Web copyright system would enable users to act online with legal certainty when making use of copyrighted content. In the current state of the Web files and content circulating on the Internet do not clearly provide users with any information about the copyrights involved, therefore users have no reliable method to know who are the owners of works or content or what uses of that work or content are permitted online. Current copyright law and legislation establishes, with the some exceptions, a reserve of rights to the creator of content, although the recognition of the gradual extension of alternative copyright licensing schemes such as the previously mentioned copyleft, CC and other free software licenses have attempted to level the playing field in terms of individual use of content online over the past few years. Due to the recent implementation of these licensing agreements, creators of content as well as copyright rights holders are able to permit certain uses of their content for free, although, on the current Web 2.0 version of the Web this information is not provided in a reliable way and is also not interpreted by machines or software applications which would facilitate these applications to act accordingly (Prenafeta 2010).

Chapter four discussed the migration from traditional passive consumers of content and information to a new type of consumer – enabled by the digital environment - which not only consumes content, but also now has the ability to produce their own content for consumption with UGC tools. The shift in terms of systems of production was also highlighted as centralised media – characterised by traditional media – is being replaced within the new digital media environment by a decentralised media model. The origin of the concept of the gift economy was analysed, with the origins of the gift economy being traced back to the birth of the Internet and APARNET. The impact of P2P file-sharing was also highlighted as well as the potential importance of this practice from a technological perspective in the realisation of a Semantic Web. The rise of UGC and the role that legislative practices, such as copyright protection, were

discussed with various types of copyright agreements also analysed. The notion of the protection and promotion of an Internet "commons" was explored and the role that corporate legislation and regulation play in a closing of the commons online. Finally, a potential Semantic Web copyright system was examined as a potential panacea for the current copyright controversy which currently hampers online UGC. In chapter five, the commons in relation of the digital environment will be discussed and analysed in more detail.

**Chapter 5:**

**The increasing importance of privacy online and the role it will play in the evolution of the Web: -** ***Online privacy and the Semantic Web***

The concept of what constitutes privacy is complex. The term privacy has had broad ranging definitions which have been rooted in legal, political, philosophical, sociological and anthropological discussions. Privacy has been defined as "the right to be alone" (Warren & Brandeis, 1890); "being alone" (Westin 1968); "intimacy" (Fried 1968, Rachels 1975, Gerstein 1978, Schoeman 1984, Innes 1992); "secrecy, anonymity, solitude" (Gavison 1980; and "restricted access" (Allen 1980) to document a few definitions of the term. Every individual, citizen, writer, theorist and academic scholar has their own definition or understanding and view on privacy. Within an Internet environment, anyone who engages with any form of online activity form part of the notion of online privacy, however as yet no single definition or classification can be agreed upon in terms of what online privacy actually constitutes. As Moore describes, the privacy concept has been developed chronologically. In the existence of the computer age, privacy has become very informationally enriched (Moore 1997). He further theorises that;

> the term "privacy" is sometimes used to designate a situation in which people are protected from intrusion or observation by natural or physical circumstances. In addition to natural privacy there is normative privacy. A normatively private situation is a situation protected by ethical, legal, or conventional norms…I use the general term "situation" deliberately because it is broad enough to cover many kinds of privacy: private locations such as one's diary in a computer file, private relationships such as e-mail to one's pharmacy, and private activities such as the utilization of computerized credit histories (Moor, 1997: 30)

The initial concept, vision and writing about cyberspace invoked a somewhat utopian ideal. No fences, no laws and no government (Regan 2002). Members of a "virtual community" would have the power to develop among themselves the norms and customs which were necessary for civil society in cyberspace (Rheingold 1993). As the Internet has evolved over the years however, into an increasingly more heterogeneous and commercial space, this initial utopian vision of a virtual community has failed to resonate. Instead, users online are faced with contrasting images; a place where race, gender, ethnicity and income have no relevance or a stratified environment in which options are presented based on who you are and what you have consumed in the past; a place where information has the ability to flow freely or where every bit

of data and information can be commodified (Regan 2002). The contrasting visions of cyberspace described above and the version which will potentially be endured will depend upon future public policy decision making; will decisions about the future of cyberspace be made with a bias for market settings, with the agenda of the maximisation of profits as the goal - or will these decisions be tempered by government involvement to ensure the issue an importance of public welfare is kept top-of-mind during the decision making process?

Arguably the most important question in attempting to develop both the social and economic activities on the Internet today is the issue of privacy. The copious amount of Internet service providers and Internet service affiliated companies from around the world who are considering the various forms of electronic commerce that exist today on the Web are concerned that online users and other consumers will not transact business at their websites and online vendor offerings because these companies cannot ensure the privacy of their consumers will be protected. How the concepts of issues regarding privacy are constructed in public discourse and in the images of cyberspace are likely to become and remain critical not only in the purchase of a paradigm for cyberspace, but also in the success of the digital world (Regan 2002). According to Regan, online privacy can be understood in three ways; first, by drawing out the differences between the physical world and the digital world as those differences affect privacy; second, by exploring how the concept of the "commons" might help us to understand social and economic relationships in cyberspace; and third, by analysing two contrasting views of privacy: privacy as a private or individual good and privacy as a common good (Regan 2002). Modern definitions of the concept of privacy are not complete. These definitions either cast a net which is too broad or is overly narrow and too exclusive in its definition. The concept of what is and is not considered private is even more challenging within today's high tech culture (Foye 2008). The evolving idea of privacy is especially apparent in today's society as individuals hold more "personal" information out for the public to see.

As society continues to increase the amount of personal information it divulges within the public sphere, there is still an expectation on behalf of the individual for privacy. People continue to maintain, and at times falsely, that they have the power to control the personal information they put out into the public, through determining who can access the information and how that

information can and will be used. According to Foye, it is extremely difficult to be able to define a fluid concept like privacy because it impacts upon every aspect of an individual as well as society (Foye 2008). Privacy issues online today are of significant importance not only due to the fact that people are making personal information more readily available, but also because various governments around the world are actively seeking their citizens' personal information, often at times without their knowledge or consent (Dean 2007). The concept of "privacy" encompasses with it many ideas relating to the power and improper use and abuse of information about people within society (Foye 2008). Professor Daniel J. Solove of George Washington University Law School attempts to answer and provide a structured framework to define the concept of privacy. Solove's main premise is based on the belief that the value of privacy is best defined as he states;

> Society involves a great deal of friction and we are constantly clashing with each other. Part of what makes a society a good place in which to live is the extent to which it allows people freedom from the intrusiveness of others. A society without privacy protection would be suffocation, and it might not be a place in which most would want to live. (Solove 2007:32).

Therefore, the protection and insurance of online user privacy is of paramount importance if the Web is to continue to develop.



5.1 The Commons and cyberspace:

The "tragedy of the commons" has proved a useful way to be able to understand the results of individual decisions about the use of natural resources. If each individual pursues their own individual interests, tragedy results because the quality and quantity of the commons decreases (Hardin 1968). The concept of the commons is an unregulated area that all who wishes to use can. Access is completely unrestricted, however there is a limit on how many people can use it/and or how much they can use it without either degrading it or forming co-operative agreements about its use (Regan 2002). Each commons has a carrying capacity, the maximum amount of use it has the ability to support. At the most fundamental level, the commons in cyberspace is the network architecture. This architecture also includes computer and communications hardware, software and equipment and software standards. Although the various parts of the network architecture may be owned and controlled by private organisations and companies, no one single entity owns a majority controlling amount. Therefore, as a result,

much of the Internet's network architecture is publicly owned. The technology, market forces, laws and norms all play a role in the existence, possible of, and conception of spaces in cyberspace (Foye 2008).

Market forces and technology-based interest groups have combined in the past to attempt to create "privatised" spaces where access may be restricted but where actions and transactions of individuals are constantly monitored. In the face of such attempts at privatisation of the Internet, proposals to legally and/or technically created "public spaces" on the Internet have been offered (Kline 1996; Gey 1998; Goldstone 1998). If the Internet and cyberspace were to be zoned so that all spaces were to become private and entry to it restricted, then the concept of a commons for cyberspace would not be able to develop. However, if there are spaces where entry is open to all, even if a private server is required to reach that space, then a commons becomes architecturally and technically more realistic.

Cyberspace and the Internet should not only be seen as a technical environment but also as a social one. Seen in this sense, the commons becomes the larger setting or context in which communities will have the potential to flourish. To better understand this concept, the notion of "cyber-reach" proves helpful. The term describes cyberspace's ability to extend the reach of an individual voice beyond that of what is possible in the physical space. Cyber-reach can refer therefore to the commons (Regan 2002). People are able to contribute, participate and create a community of ideas. The suggestion of "building a commons" in cyberspace has been introduced in the debates about intellectual property online from those concerned about maintaining the free flow of ideas. Professor Lawrence Lessig, Stanford Law scholar and founder of the Creative Commons Foundation advocates an intellectual commons rather than a "propertization" of ideas that is likely to result if notions of property dominate (Lessig 1999).



5.2 Personal information as a "common pool resource":

The idea of an information ecosystem or intellectual commons assists in revealing questions pertaining to ownership of information as well as the interconnectedness of information activities. In discussing the ownership of personal information, the argument can be made that individuals do not legally or technically "own" information about themselves. The argument that

"ownership" of such information is shared for example by an individual making a purchase or inquiry and by the company or business involved in the transaction (Singleton 1998). This may be especially the case for information pertaining to what people do in a public or monitored space. Information about what people do in that space may be commonly accessible and similar information about others' activities are similarly available in that space. This may then begin the process of creating a flow of personal information events and exchanges that have the capacity to increase as activities leave traditional "private" areas and begin to enter areas of a more mixed public-private nature (Regan 2002). The flow of information about personal movements and transactions in the digital world can therefore be viewed as resulting in a resource system that a number of organisations or individuals can "appropriate" and use for their benefit.

5.3 The nature of privacy in cyberspace: private good or common good:

Technology and market forces over the last few years have made it increasingly more difficult for an individual to protect their personal information. Do people share a common future with respect to privacy? If people give up their privacy; abuse their privacy or if corporations entice individuals to give up privacy through some form of incentive system, will this lead the notion of ultimately less privacy? Finally, does the action of one deplete the capabilities of others to create privacy? (Regan 2002). If the assumption is made that at least a portion of cyberspace can be conceived as a commons and that personal information flows can be considered a "common pool resource" within that commons, then what measures and precautions can be put in place to protect this resource from abuse? Before this question can be approached however, it is useful to examine incentive systems for individuals making use of the Internet as well as those who are engaging in electronic commerce and the incentives of organisations seeking to appropriate the flow of information about those transactions. It is also important to distinguish whether these incentive systems protect the common pool resource of personal information for abuse.

5.4 The development of online profiling and attempts at regulation:

Widespread outcry and condemnation about online privacy first began in the late 1990's when one of the world's largest Internet advertisers - DoubleClick Inc. – purchased an offline direct marketer named Abacus Direct Inc. (Tedeschi 2001). DoubleClick is an Internet advertiser that has the ability to track users online and can then post tailored, targeted advertising across their

assembled network of various websites. Similarly, the newly acquired Abacus Direct had the ability to acquire information about consumers' offline habits and could use that data to be able to target direct postal marketing mailings (Macavinta1999). Subsequently, even prior to the merger of these two organisations many online privacy advocates had already raised concerns with DoubleClick's data collection practices in the past (Federal Trade Commission Report 1998). However at the time, these reports and concerns did not gather widespread attention from consumers due to a host of reasons. The biggest were that the information that online marketers and organisations were collecting were anonymous and only associated with a computer and not a specific online user. The other important factor was that many users were completely unaware of the practice of data collection by these online organisations (Macavinta 2000). With the purchase of Abacus by DoubleClick, public attention was focused on the use of personal information and data used in online advertising.

Scrutiny also increased due to the fact that at approximately the same time as the merger, DoubleClick changed its privacy policy to allow the association of the previously nameless information it collected with identifiable data. Privacy watchdogs feared that not only would DoubleClick have the ability to collect personally identifiable information on the Internet, but that this information would also be combined with the data about consumers' offline habits and behaviours too. The Federal Trade (FTC) in the United States as well as several State Attorney General's took issue with this development and contacted DoubleClick about their intended business practices. As a result DoubleClick announced that it would no longer plan to combine offline and online databases (Keck 2002).

Due to the events that took place, as well as growing complaints from consumer advocates, the FTC and the U.S. Department of Commerce proposed that the online marketing industry should attempt to regulate itself before any legislative action would take place. In response to this, the online marketing organisations formed a trade group called the Network Advertisers Initiative to have the power to monitor the industry's attempts at online privacy reform (http://newtworkadvertising.org/aboutnai_nai.asp). Unfortunately however, the attempt at self-regulation is now viewed as an abject failure (Hoofnagle 2005). The practice of data gathering

has not decreased and consumers do not feel anymore safe and secure about their data and information online.

Before any alternative solutions can be explored however, it is important to understand the nature of various online marketers' information gathering behaviours. To maximise the value of consumer information and data, online marketers and organisations have continued to develop innovative technologies to assist in harvesting data online. One of the most important concerns about these various technological advances is not their ability to track an online user on a single website, but to assemble profiles of these users across vast amounts of unrelated websites (Goldman 2006). Advertisers contract with multiple websites, each website allows for the collection of information and data about online users who visited those specific websites (http://www.abacus-us.com/about_abacus/abacus_overview/). The advertiser is then able to compile the information that they have gathered from the various sites into a single user profile. These resulting profiles which have been developed can consist of hundreds of discrete data points about a user. As the online advertiser continues to collect additional information about a specific website user, it is able to become better able to narrowly target advertisements to that specific user's personal preferences and desires (Goldman 2006). The use of user-specific targeted advertising is synonymous with a more focused method of traditional advertising tactics. In the offline world, advertisers are able to conduct marketing surveys to better understand and determine what a consumer's purchase behaviour would be. Advertisers then select a medium or channel as well as a location which would match the demographic information that they have obtained to best target and communicate with their ideal consumer. Demographic based advertising however is limited. The two main factors for this limitation is that, firstly, the marketer is unable to target a precise consumer from the group that best fits the relevant demographic. Secondly, is also always challenging to determine which advertisement will be the most effective.

Online profiling solves both problems. The ability to develop extremely detailed consumer profiles which marketers can collect online gives them the ability to target their marketing and communication to specific individuals who are the most likely to want to purchase their offering. In addition, because marketers can track potential consumers, they can also have the ability to

determine the effectiveness of any particular advertisement. These two examples and capabilities provide proof that online profiling has the potential to make marketing that much more effective. It is important to mention however, that despite the ability for marketers to create online user profiles of consumers, the information that is collected is usually not associated with one specific, individual person. The profiles developed are representative of a distinct pattern of usage online and is linked only to an identification code which is placed on a computer and not to the specific user. The data found in this specific way is referred to as "Non-Personally Identifiable Information" (Non-PII) (Federal Trade Commission 1998). There are a number of ways however to link the profile gathered to a specific person, therefore the profile becomes Personally Identifiable Information (PII). For example, if an online user enters their name into a form on a website to make a purchase of some sort, the website can then have the ability to connect the name of the user with the user's previously anonymous profile online.

Online advertisers thus have the potential to create enormous databases of online user information, both with the use of PII and without. Although the practice of online user profiling is associated with network advertising agencies, not all profiles are developed or constructed by network advertising companies. Some websites online create user profiles of their own customers based on their interactions on the website. Other online businesses create user profiles as part of a service. For example, when offering discounts on particular products, or providing references to other websites displaying the same topics those already visited by the online user. Online profilers who have become the most effective at collecting data of users are the Internet Service Providers (ISP's). Due to the fact that ISP's are able to track users for the entire time period that they are logged on to their service, ISP's have the power to compile vast amounts of information and data about their consumers' interests and various online habits (Goldman 2006).



5.5 The loss of trust online:

The most damaging consequence of online user profiling is that it has fostered a climate of distrust amongst online users. Due to the fact that users are not usually aware of marketers and other online organisations' various methods of collecting and distributing of their personal information, many users feel insecure about surfing the Web as well as revealing private information online. The greatest privacy concern for online users is perhaps that after they have

interacted or ordered enough products or made use of enough services online, the companies and businesses that they have been in-contact with will have been able to accumulate enough personal information about them to harm or take advantage of the user. With the consequences of revealing too much information about themselves online, the user risks being exposed to the threat of junk mail, and other forms of spam as well as other more serious problems. Two aspects of the Web also make the worry of privacy concerns worse for users; the first worry is that information can be collected much easier about them from third parties and the second concern is that that information can be used extremely easily to tailor what that user may experience online.

Software on the Web now has the ability to track the pattern of clicks an online user makes on a specific website or host of other websites. For example, if a user were to open an online magazine, the publishers of the magazine would have the ability to watch which items the user reads, be able to tell which pictures they view and be able to extract information about that user simply by analysing that users behaviour when interacting with that website. The term for this data-capturing is referred to as "click-stream" information.

Web technology that has been developed over the last few years has focused on three specific motive powers which include integration, virtualisation and socialisation (Bauman 2006). Specifically with Web 2.0 which was introduced in the 2000's, the web technologies are integrated into mash-up methods which are based on not only tagging, RSS (Real Simple Syndication), but also the SOA (Service-orientated Architecture) and SaaS (Software as a Service) technologies.(http://en.wikipedia.org/SotwareasaService/). The virtualisation of online personal data and applications were developed based on AJAX (Asynchronous JavaScript and HTML). The socialisation which is represented by the concept of blogging, social-networking and cooperative knowledge creation (e.g. Wikipedia) was also developed rapidly (Cho, Moon, Park, Baik 2008). The Web technologies that have/are being developed by socialisation as the motive power provides the increase of social networking ability however they also make the exposure of privacy about personal information more complicating and harder to solve. In Web 2.0, the current version of the Web, the weblog which is the archetype representative of personalised media, plays the role of the personal publication, personal broadcasting and of community – does not expose the personal information protected by the law such as financial

information, medical information or personal identification numbers (Cho, Moon, Park, Baik 2008). However, on the current version of the Web, this type of information is still not satisfactorily protected.

In the current Web 2.0 environment, there are a number of methods to protect the privacy of content users online. The most common and obvious of these are the use of anonymous content sources or the use of pseudonyms, which are sure methods which prevent the exposure of information such as the owner of the contents identity from being revealed. Password protection is a method of privacy protection that allows the user to set up a password and only the subjects who share the password can access the specific content. Traditional access control models also exist to protect user privacy online. These include MAC (Mandatory Access Control), the DAC (Discretionary Access Control), the MLS (Multi-Level Security), and the RBAC (Role-based Access Control). The MAC and MLS are difficult to apply to self-regulating privacy control and the DAC consumes too much efforts to connect the individual subject who wants to access personal media and the object which is contents directly. In addition, the RBAC is a model to give permission optimally and to share resources based on the role in the environment that a large scale user and computer resource exist. However, it is difficult to assign the subjects that are made by an individual social network to the role related with works in the enterprise (Cho, Moon, Park, and Baik 2008). The P3P (Platform for Privacy Preference) decides whether the personal information is provided according to the browser's preference and specific privacy policies (Reay, Beatty, Dick et al 2007). The DRM (Digital Rights Management) has the power to protect the rights and the profits for the content provider and also is effective in preventing the "illegal" copy of contents by making the policies which approve the reliable owner of the content to use (Gonzalez 2005). DRM is also a technology that supports not only the generation of the contents but also the distribution and management of it, such as billing, settlement agent, etc. The limitation of DRM model is that it only defines the policies which include reading and copy frequency and applies that to content. Therefore it cannot be successfully applied for composing the relationship besides building and extending social networks (Cho, Moon, Park, Baik 2008).The ReBAC (Relationship-based Access Model) can manage the accesses to the personal information based on the relationship by the contents owner (Gates 2007). However, relationships that are available in this model are limited. Users can only use predefined

relationships from service providers (e.g. Facebook), and it is difficult for the user to define the relationships themselves directly (Gates 2007).

5.6 Privacy theories – offline and online:

Modern definitions of privacy are not complete, with these definitions either casting a wide net that is too broad or overly narrow and too exclusive in its definition. The concept of what is and what is not considered private is even more challenging on the Internet. The evolving concept of privacy has become increasingly apparent online as users hold more personal information out for the world to see. The social networking website, Facebook has over 175 million active users who make use of the site on a daily basis (http://www.facebook.com/press/info.php?statistics). Identification numbers can be sold to firms for a small fee and even the advertisements' seen online has been personally tailored to users' personality traits. Online organisations know exactly what type of music consumers listen to, DVD's they like and what they put in their shopping baskets for consumption. At one end of the paradigm, the claim is that the concept of privacy is inalienable and should be granted to all citizens regardless of that citizen's personal perceived value for their privacy. Conversely, there is the belief that people only seek privacy when they have something to hide. Within this broad spectrum, most of the academic and commercial literature on the issue of privacy tends to be biased in favour of granting a rather extensive privacy act (Goldman, Solove, Foye, et al). The disparities of interpretation of even a simple definition of the concept of privacy may lead some to believe that legislating privacy is near to impossible, specifically if consensus cannot be reached with regard to what exactly it entails. Any form of legislation concerning privacy would require a degree of community values; however the community cannot seem to be able to agree on the importance of privacy. However, because so many people that do view the issue of online privacy as a major concern, there have been numerous attempts to place some form of legal control over the collection and dissemination or online users' personal information (http://www.cdt.org/legislation/0/3/). These various controls have not proved to be successful however; due in part to the reluctance of various governments around the world to pass a binding legislation that would govern the Internet. The reluctance of government to impose any form of legislation stems from various sources. The most obvious factors pertaining to this, is that laws governing the Internet are difficult to enforce and would require extensive resources and would provide a false sense of

security (http://judiciary.house.gov/legacy/41176.htm.) There are also philosophical reasons why governments should not pass laws for the Internet, due to the fact that it is seen as more efficient to allow traditional law to govern issues stemming from the online environment than to create a new set of laws that only would pertain to cyberspace (Easterbrook 1996). There are also practical reasons which exist, such as intense interest lobbying, which can be seen as one of the reasons why governments have been slow to enact any biding regulation over the Internet. According to Lessig, "The reasons for this lack of law in America protecting privacy are complex. One set relates to the extraordinary lobbying power of interests that would use the data affected by information privacy regulation" (Lessig 1999: 21). To attempt to address the lack of legislative assistance, a number of privacy theories have emerged over the last few years. The three that will be analysed for the purpose of this thesis include the Property Rights approach; the Tort Law approach; and the European Union approach.

- ***The Property Rights Approach:***

One of the more contemporary proposals in terms of dealing with the issue of privacy online is to grant a property right over personal information (Litman, 2004: 1287-88). The theory is that once the property right is created, people would be able to control their own information. The property right solution to privacy has gained momentum due to the fact that it can potentially solve the issue of online privacy without undue government intrusion on the Internet. Once the right is declared, standard property and contract law can take over (Goldman 2006).

Lessig has taken the concept of property rights management one step further. According to Lessig, the assignment of a property right is only the first piece of the solution; technological controls over personal information must also be put in to place (Lessig 1999). Lessig theorises a system where privacy preferences can be entered into an automated "privacy butler" which can have the ability to negotiate with websites and marketers automatically. To ensure the system works, entitlement to the property rights for personal information must initially be allocated to the user (Schwartz 2000). Users' then would have the ability to have the control over their own information online.

The use of creating a property right in personal information has its limitations in praxis however. The primary concern with the property rights proposal is that online users will end up unwittingly selling the rights to their information. A large proportion of users do not ever read click-through privacy agreements that exists online (Specht v. Netscape 2002). A click-through agreement or "click wrap" agreement is a version of an online contract where users can click a digital button to agree or disagree to privacy and other disclaimers. If property rights were given for personal information, it is likely that data collectors would include assignments of personal information in their click-through agreements. The result would be that their private information would have been fully assigned to the respective online organisation or website before an online user has come to the realisation that they have "mistakenly" given up their property rights. Such a user then will no longer have legal control over the use of her information. The major challenge is also exacerbated due to the fact that because of the property rights, it will make the information about the specific user that much more valuable. Therefore as profilers are able to exclude their competitors from the information they have been able to collect, the information becomes more valuable. The increased value could encourage even more data harvesting from online websites and organisations (Litman 2004).

- ***The Tort Law approach:***

Another approach to the issue of online privacy is proposed by Jessica Litman. The approach relies on Tort, rather than property law (Litman 2004). Similar to the property rights approach which is attractive due to its grounding in traditional common law, so is the Tort Law approach (Goldman 2006). Tort Law is a body of law that addresses and provides remedies for civil wrongs not arising out of contractual obligations (Litman 2004). Many online users have developed the expectation that their information online will not be collected, bought or sold. As Litman points out, the solution of Tort Law has great appeal on a few levels. Firstly, Tort Law is already a well-established law and would not need large amounts of modifications to add a clause for invasion of online privacy to its list of potential claims (Litman 2004). The Tort Law approach to online privacy protection also has

an added appeal due to the fact that is reasonably feasible too. Secondly, because one of the primary issues involved in online privacy has been the difficulty of user consent, Tort Law can assist by contributing a mechanism to deal with the problem (Goldman 2006). A final advantage of Tort Law is that as a common law solution, the rules can be altered to be able to reflect the changing technology and social attitude toward the issue of online privacy (Litman 2004).

However, much like the concept of property law, Tort Law does not provide an all-encompassing solution to the problem of Internet privacy (Litman 2004). A solution making use of Tort Law requires judicial intervention between private parties. Therefore the courts would be the final arbiters of privacy rights (Goldman 2006). This solution has the potential to work, however only if consensus as to the definition and the value of privacy can ultimately be achieved. While the judicial system may be efficient at determining a community's norm, the courts place such a divergent value on their personal information that it would prove difficult for a court to decide how much protection any particular party should receive (Goldman 2006).

- ***The European Union approach:***

A third type of privacy solution based on the privacy laws established in the European Union (EU) could provide a potential solution to solving online privacy concerns (Cope; Huie et al. 2002). The EU has been much more aggressive about the idea of protecting privacy online. In passing a Directive on the Privacy of Personal Data, the Directive declares that privacy is a fundamental human right and ensures that all member states within the EU are required to pass laws which create a high level of protection for personal information found online (Fromholz 2000).

The EU has stressed that each citizen has the right to have information self-determination (Reidenberg 2001). The issuing of the directive attempts to balance business interests with individual privacy concerns by putting strict restrictions on the ways in which online data collectors can appropriate personal online user data. These limits include the control over the collection of sensitive data, such as medical

information and the limitations on the collection of personal information that is not related to the distinct purpose for which it was originally gathered (Reidenberg 2001). Due to the fact that the Internet does not experience any geographical limitations or borders, the EU also added provisions concerning the transfer of data between various countries (Reidenberg 2001). The Directive also does not allow the transfer of data across national borders to states that do not have adequate privacy controls or measures put in place in those respective countries (Reidenberg 2001). The only drawbacks of this privacy protection Directive is that constitutional barriers in other countries where there is a higher value placed on the value of freedom of information, which will make it difficult for this form of legislation to be universally implemented.

Despite the stumbling blocks of the solutions to the myriad challenges of online privacy as highlighted above indicates, Governments and legislators from all over the world have continued to attempt to propose additional legislative solutions to the issues pertaining to privacy online – although most attempts have proved unsuccessful (http://www.economist.com/debate/days/view/569). The failure of these legislative attempts has been unsuccessful for a host of reasons (http://www.cdt.org/legislation/106th/privacy/majorbills.shtml). The major reason for these failures continues to be that various governments around the world are generally reluctant to attempt to regulate the Internet (http://www.business2.com/articles/web/0,1653,16423,00.html?ref=cnet.) Due to the fact that the Internet has been growing and evolving at such a rapid pace over the last few years, governments are also hesitant to be seen as putting obstacles in the way of this development and growth of the Web. The result of this is that the Internet has seen little in the form of any type of regulation from governments, with the little regulation that does exist online has been careful not to infringe on the democratic nature that the Internet stands for. Countries that have experienced large and direct regulation from governments in terms of Internet regulation are China, North Korea and Iran, where this form of government or state legislation online has the converse effect and intrudes upon the privacy and democratic nature that the Internet was intended for.

Beside governments around the world reluctance to attempt to regulate the Internet, other reasons also exist for the lack of legislative action to regulate privacy online. Business interests that operate online argue that limiting personal data collection will damage the economy (http://www.wired.com/news/privacy/0,1848,42123,00.html.). Online business and organisations that support this position believe that any form of government legislation that does not specifically address a targeted and tailored solution to fix a specific problem should not be passed, and that the lack of consumer confidence when it comes to issues of privacy online should not be sufficient to impose any form of legislation. Business interests online also make the argument that the market has the ability to correct itself without any government intervention. This thinking is consistent with the current neo-liberal approach to politics and the economy from most countries around the world. Corporate interests maintain that if online consumers truly valued their right to privacy, then they would become more educated on the topic and take greater care in protecting their privacy on the Internet and that eventually those users who are privacy-conscious will become more adept and attracted to seeking websites online with better privacy protection offered.

Copyright holders and large corporations have long lobbied and attempted to persuade governments around the world to impose stricter laws and legislations when it comes to passing more stringent copyright infringement law against technological innovators or ordinary citizens. Whether the innovation has been a photocopier, a VCR, or more recently peer-to-peer (P2P) file-sharing networks, large corporations and legal rulings such as MGM v. Grokster and A&M v. Napster, have proven that big business and corporate interest have no problem calling on government legislation to regulate online behaviour when it is in their best interest (Klimis & Wallis 2009). The concept of "net neutrality" refers to when the Internet is a level playing field for all who make use of it. It refers to the principle that everyone using the Internet has an equal amount of access to everyone else. This Internet principle has allowed citizens and online consumers from all over the world to seize a great deal of power for themselves online. Because of the principles of net neutrality, any online user is given the choice and access to any media outlet, global, local or homemade, amateur varieties, with a large amount of users deciding on consuming the later. This development has unsettled many larger multinational corporations which have resulted in these large companies containing lobby and to put pressure on

governments to attempt to over-turn net neutrality. The attempt from these large multinationals is to replace it with an undemocratic system. These actions highlight the double-standard when it comes to the ethics and business dealings of large corporations on the Internet. When it is in their own interest, such as the example of online profiling and data mining of online users these organisations deride the fact that government should attempt to impose legislation on the Internet.

Beyond the special interest groups, political and ethical role of government in the legislating of privacy online is the issue of whether legislation should fall under an "opt-in" or "opt-out" rule (McCullagh & Sager 2001.) If the adoption of the "opt-out" rule were to be universally implemented online, then this would result in the default rule being set to only allow data collection taking place only if specifically requested by users out of the system. Under an "opt-in" default rule, conversely, online organisations would need to persuade users to permit collection of their personal data online. Online organisations naturally prefer the former option, while Internet privacy advocates prefer the latter approach. This solution would propose the most realistic way to solve the issue of online privacy, however for it to be effective, it would require commercially based websites to post their privacy policies and users to then decide whether or not to continue to participate or interact with that specific website (McCullagh & Sager 2001).

The issues highlighted above all form part of an over-arching challenge to online privacy and the role that government legislation can play in that regulation. Legislation in its purest form is designed to be able to represent community ideals and values (Goldman 2006). Yet, the online community around the world, as well as academic scholars and commercial writers find it difficult to come to a binding agreement or consensus on what constitutes privacy online. Consistently, government legislation proposals have tried, unsuccessfully, to be able to draw distinctions, despite the theoretical morass by attempting to establish a specific range of agreed behaviour that is seen as suitable for every member of the public (Internet Spyware I-SPY Prevention Act of 2005 H.R. 744, 109th Cong. 2005). In the absence of a clear and distinct definition of online privacy however, the definition of inappropriate behaviour or conduct online regarding privacy becomes challenging as the value users place on their privacy may be relatively evenly distributed around the world.

Legislators are also caught in the middle of organisations that make use of data profiling and obtain economic benefits from this practice, and the online users with a vaguely defined but equally powerful affinity for their own privacy (Goldman 2006). While governments cannot ignore the ethical and emotional requirement for the protection of their citizens' privacy online, they can equally not simply dismiss the apparent economic benefits of online data profiling for organisations and corporations online. Government legislators and policy makers should instead not too narrowly define the concept of online privacy, which has proved difficult in the past, but should however attempt the easier and clearer objective of allowing a level of consumer confidence and trust whereby the Internet can be used at its most efficient level.

5.7 Privacy 2.0:

Although privacy concerns with government and corporate databases remain a priority, they are slightly dwarfed compared to the ever increasing threat to privacy online that does not fit the standard analytical template for addressing concerns regarding privacy threats. These specific threats relate to the generative patterns also found in the technical layers of the Internet structure as well as PC security, and in the content layers for online websites such as Wikipedia and Facebook. The emerging threat to privacy online serves as an example of generativity's downsides on the social layer of the Web, where user generated contributions from remote amateurs can enable vulnerability and abuse which calls for some form of intervention.

Generativity refers to a system's capacity to be able to produce unanticipated change through unfiltered contributions from broad and varied audiences (Zittrain 2008). Terms such as "openness", "free" and "commons" all evoke elements of generativity, but they do not necessarily capture its full meaning. The concept of generativity pairs an input consisting of unfiltered contributions from a wide variety of diverse people and groups, who may or may not be working in unison with one another, with the output of unanticipated change. For the inputs, how much the system facilitates audience contribution is a function of both technological design as well as social behaviour. A system's generativity describes not only its objective characteristics, but also the ways in which the system relates to its users and the ways users can relate to one another. In turn, these relationships can reflect how much the users' identify as contributors or participants, rather than as mere consumers.

5.8 Solving the issues of privacy 2.0:

What solutions exist to respond to the threat of privacy online and the notion that almost all content and information that online users post on the Web has the potential to move beyond their control and which can relatively easily be monitored and shared by third parties? How is it possible to deal with elaborate systems that are able to offer and create judgments about what online users read or buy and whom they are friends with?

According to Zittrain, the central problem is that organisations creating, maintaining, using and disseminating records of identifiable personal data of users, are no longer just organisations, but instead they are also people who take pictures and stream them online, who blog about their experiences and who share on social websites rich descriptions of their friends and interactions (Zittrain 2008). The development of these types of databases online, are quickly becoming as influential as the ones that large organisations are able to populate and use. It is far easier to regulate and control organisations with regards to adhering to enforced privacy protection policies online; however conversely, it is far more difficult to enforce those similar regulations and rules on individuals online.

An additional challenge to controlling the collection and dissemination of data from individuals online is that the idea of mandating that an individual be able to find out what an information gatherer knows about them, much less to attempt to correct that information is according to Zittrain, "categorically more difficult to implement when what is known is distributed across millions of people's technical outposts" (Zittrain 2008: 57). Zittrain suggests that as a potential solution, a combination of technological steps might eliminate the most egregious issues Privacy 2.0 faces and even have the power to provide a framework in which to be able to implement solutions without having to reject the generative framework that gives rise to Privacy 2.0 in the first place.

5.9 A technological solution to online privacy through the emergence of Web 3.0:

What solutions exist to respond to the threat of privacy online and the notion that almost all content and information that online users post on the Web has the potential to move beyond their control and which can relatively easily be monitored and shared by third parties? How is it

possible to deal with elaborate systems that are able to offer and create judgments about what online users read or buy and whom they are friends with? The remainder of this chapter focuses on the increasing importance of privacy online and the role it will play in the evolution of the Web, looking at the role that the envisioned successful migration of the Internet from Web 2.0 to Web 3.0, has the potential to provide a technological solution for online user privacy protection through the development and implementation of ontology-based Markup language, such as Resource Description Framework(s) (RDF(S)) and Web Ontology Language (OWL) (Yuh-Jong, Hong, Guang 2008).

The Web 1.0 and Web 2.0 online privacy protection problems that have been experienced in the past and are currently being experienced on the Web today is the primary focus of the present privacy protection languages such as P3P/EAPL and XACML (Cranor; et al. 2002). However, the systems which are currently being employed with these privacy protection languages do not have the ability to deal with the digital trace protection and disclosure issues due to the fact that online users' digital traces are usually stored as unstructured text-based weblog files on the Web (Yuh-Jong, Hong, Guang 2008). Added to this, to enable achievement of information sharing and the exchange objectives on the current version of the Web, Web 2.0, the collection of this information from multiple relational databases in the "deep web" needs to be accomplished (Yuh-Jong, Hong, Guang 2008). As a result of this, the information disclosure policies and the mechanisms for satisfying privacy protection principles on the Web are embedded into the relational database system (Yuh-Jong, Hong, and Guang 2008). In the Web 2.0 version of the Web, it is not possible to have either information sharing or information disclosure actions which exist across multiple relational databases (Yuh-Jong, Hong, and Guang 2008).

If there is a successful migration from Web 2.0 to a Web 3.0 version, this will allow for all online user profiles and digitally traced information to be annotated via ontology-based Markup language, such as RDF(S) as well as OWL (Yuh-Jong, Hong, and Guang 2008). Ontologies+rules for online privacy protection are a combination of two distinct approaches; homogeneous integration and hybrid combination (Maluszynski, 2005: 55-72). In a homogeneous integration, ontologies will be the main body of concept for information structure, where Data Link Programs (DLP) is the most restricted one for this approach (Grosof; et al,

2003: 48-65). Therefore, all of the major representations and terms for online privacy protection will be declared and defined in ontologies and move to the rules for further inference processes, such as semantic Web Rule Language (SWRL), allowing the knowledge flow to be uni-directional within a homogeneous integration of ontologies and rules (Horrocks; et al. 2004) Here, the rules can be regarded as an added-on component to the ontologies component to enable the enhancement/extension to the expression limitations of ontologies (Yuh-Jong, Hong, Guang 2008).

Within a hybrid duality, the ontologies module is represented as OWL or RDF(S), and it exists side by side with the rules module represented as Rule Interchange Format (RIF) to be able to enforce the knowledge representation and integration on the potential Semantic Web layer (http://www.w3.org/2001/sw/). There are a number of possible hybrid ontologies+rules combinations, such as AL-log, DL-log as well as DL+log to consider as a policy language for the representation and enforcement of privacy protection policies on the Internet (Rosati, 2006: 128-151). AL-log refers to the integrating data log and description logics found online (Donini; et al, 1998: 227-252). DL-log and DL+log refer to both the tight integration of description logics as well as the disjunctive data log (Rosati 2006). Under the hybrid ontologies and rules combination, some of the terms in privacy protection policies online will not be explicitly declared or narrowly defined in ontologies however they will be declared as predicates in each rule (Yuh-Jong, Hong, and Guang 2008). Therefore the knowledge flow between the ontologies+rules might be bi-directional to ensure the re-enforcement of ontologies and the rules which express power to each other (Yuh-Jong, Hong, and Guang 2008). It must be declared however, that at the time of writing this thesis, it is still unclear which homogeneous/hybrid ontologies and rules combinations are to be used as an ideal representation and enforcement of privacy online protection systems policies. This understanding requires further study by computer scientists and engineers.

Yuh-Gong et al, propose the use of Semantic Web ontology in the online privacy protection policies. This proposal would take the form of the three types of ontology in the DL+log based ontologies+rules combination for the Semantic enforcement of privacy protection policies. These policies include the data user ontology; data type ontology; and purpose ontology (Yuh-Jong,

Hong, and Guang 2008). A detailed structure with associated class and property hierarchies would be represented as follows;

- The structure of data user ontologies for both class and property hierarchies are proposed to categorise the type of users and with their membership corresponding to an organization (Yuh-Jong, Hong, Guang 2008). Figure 5.1 illustrates this proposed data user hierarchy to classify data user class hierarchy.

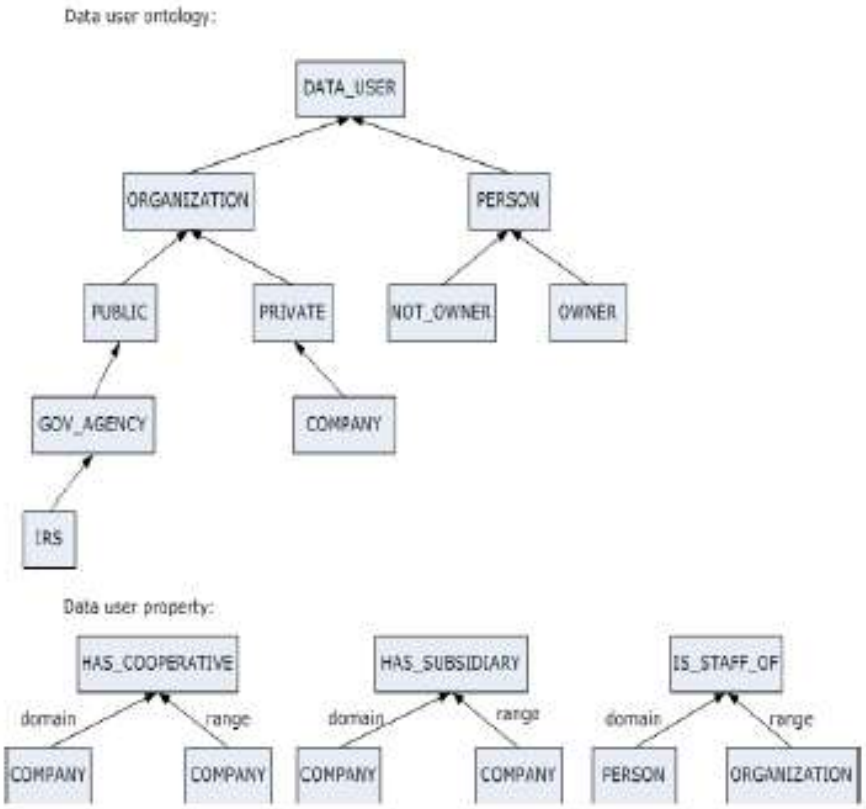



***Figure 5.1: A data user hierarchy to classify the data user class hierarchy.***

(Source: Semantic Enforcement of Privacy Protection Policies via the Combination of Ontologies and Rules. Department of Computer Science. National Chengchi University, Taiwan, 402, 2008)

- The data type ontologies to describe both the hierarchies of class and property for personal online user profiles and digital traces are illustrated in figure 5.2 below.

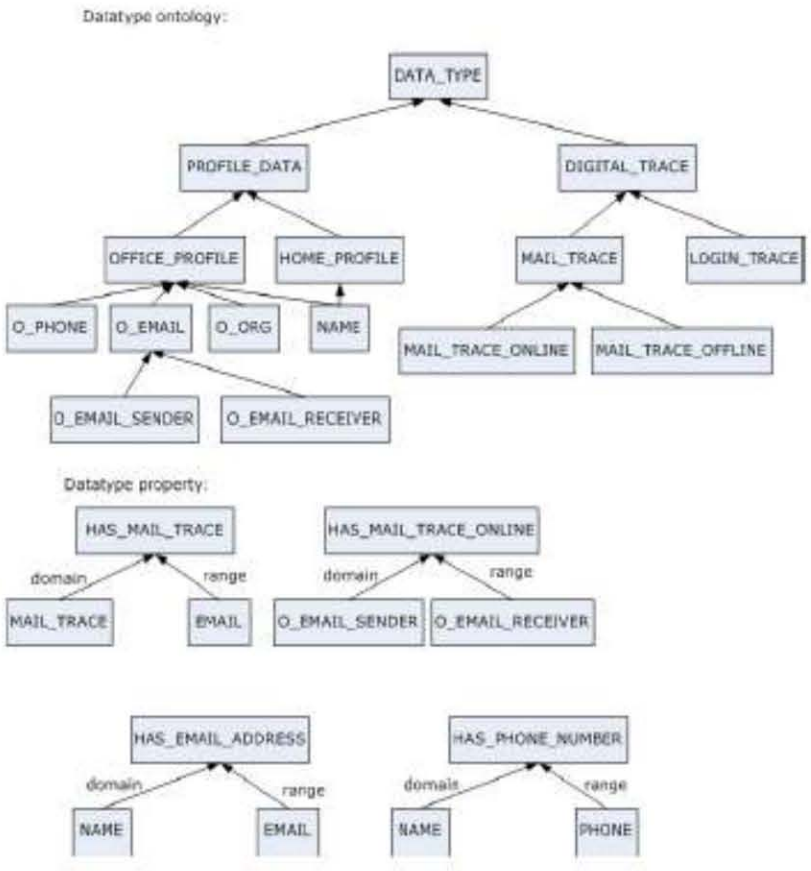



***Figure 5.2: A class hierarchy classification for both personal profiles and digital traces.*** (Source: Semantic Enforcement of Privacy Protection Policies via the Combination of Ontologies and Rules. Department of Computer Science. National Chengchi University, Taiwan, 402, 2008)

- The purpose ontology to describe the intention of data user to use a particular type of data is illustrated in figure 2.3 below.

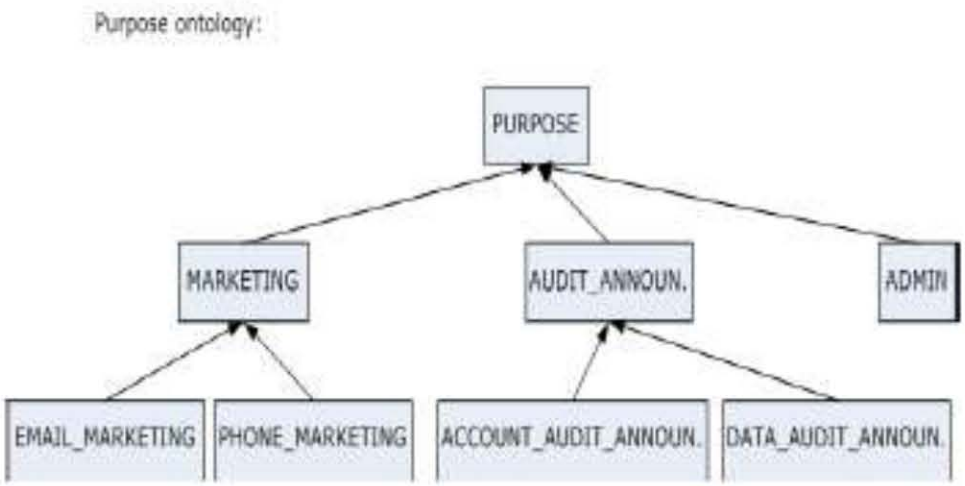



***Figure 5.3: A purpose ontology for the classification of different data usage purposes.***

(Source: Semantic Enforcement of Privacy Protection Policies via the Combination of Ontologies and Rules. Department of Computer Science. National Chengchi University, Taiwan, 402, 2008)

Currently, there are a few challenges to researchers and computer science academics in elaborating the Semantic Web core of technologies for the modelling of privacy protection policies in representation and enforcement on the Internet. At the time of writing this thesis, scholars are not sure which ontologies and rules combination are best suited and the most appropriate under the information usage purposes and conditions (Rosati, 2006: 128-151). The proposed solution to online privacy provided above which a Semantic Web would be able to facilitate, would in summary, be possible due to the enforcement of all profile information and digital traces with associated disclosure policies using a specific ontologies and rules combination which could be facilitated by DL+log which a Semantic Web would allow (Yuh-Jong, Hong, Guang 2008). This proposed information modelling structure and access mechanism would be quite different from the current Web 2.0 architecture, where online user profile information will be defined as relational database tables in the deep web, and the digital traces used for recording each user's online Web habits will be defined and collected as an unstructured

weblog. In Web 3.0 architecture, information cyberspace could result in personal profile information as well as related digital traces being modelled as an ontologies+rules combination with Semantic query as the only feasible access mechanism (Yuh-Jong, Hong, Guang 2008).

An additional technological solution to the challenges posed by online privacy protection which the concept of Web 3.0 could potentially solve is through the development of a new access control model which would make use of Semantic Web capabilities (Cho, Moon, Park, Baik 2008) The requirements of the proposed access control model can be used to protect the privacy of users online and build the social network in a Web 3.0 environment. There are three requirements that are necessary for the access control model to function efficiently. They include;

- ***Requirement 1:*** The security of online user data should be assured in the Web.
- ***Requirement 2:*** The definition and management of the detail relationship should be available.
- ***Requirement 3:*** The independent social network should be built by the owner of the information.

In the current Web 2.0 version of the Web, JAVA Script is frequently used to implement the interactive Web applications which make use of Web 2.0 technology. In addition to this fact, Web 2.0 technologies such as AJAX which focuses at openness such as user participation, still experiences online security problems on the existing Web (Cho; Moon; Park; Baik, 2008: 1048).

Thus, the proposed access control model theorised by Cho et al, suggests that the model applies Web 3.0 security methods such as Web Service Security (WS-Security) as well as XML security to be able to satisfy the "requirement one" mentioned above as well as the Web security assurance. The "requirement two" of the proposed model aims to prevent the exposure of online users' personal information. Unlike the current membership management which is supported by the existing blogs and various communities found online, it is possible within this new Semantic Web access model to define the detail relationships directly by the online user themselves. In addition to this point, the detail relationships have the power to then satisfy "requirement three"

of the access control model. In this instance, the information owner can make their social network extended by being able to connect and apply the relationship of each individual user (Cho; Moon; Park; Baik, 2008: 1048).

Figure 5.4 below illustrates the entire architecture of the proposed access control method which applies the social network concept and also protects online user privacy. As figure 5.4 indicates, the proposed model is composed of three parts including the "subject", "object" and "permission" (Cho, Moon, Park, Baik 2008). First, the subject; which includes Web user and their social network, the Web security technologies such as WS-Security and XML security, are applied to ensure the security between the user and their network. The social network which is specifically user centric can be composed by the specific user. The user can then set-up the group names and members according to the user's personality. The development of this form of architecture is not presented in a layer. It is however composed of multiple layers. In the first layer, a user can define their own social network, and in the second layer, the user's social network can be collected with integration being done automatically (Cho; Moon; Park; Baik, 2008: 1048). In this instance, each specific data group can define the metadata for integration view to share and extend the social network with any other user they choose to. When the user shares their social network, they have the ability to map the group with other users' and extend the network after checking meta-information of the other group. In this integration view, the online user security policy proposed by the access control model can be applied on the whole to the entire network. In this model "Friend of a Friend" (FOAF) can be used to compose the social network without a centralised database (Brickley & Miller 2007). FOAF is also machine readable ontology and is represented by OWL. In the object section of figure 5.4; this part of the access control model refers and includes the Web contents and Semantic Web technologies which are able to categorise them (Cho; Moon; Park; Baik, 2008: 1050). The "object type" is defined as the defined as the URL, title, image, text and voice, and the operations for the object are also shown as create, view, link and refresh. Because of this, online users are able to represent the content in a Semantic format due to the defining of permission which is mapped out between subject and the object. The access control model also makes use of the "folksonomy", which refers to the practiced method of collaboratively creating and managing tags to be able to annotate and categorise content found online (http://en.wikipedia.org/wiki/Folksonomy/).

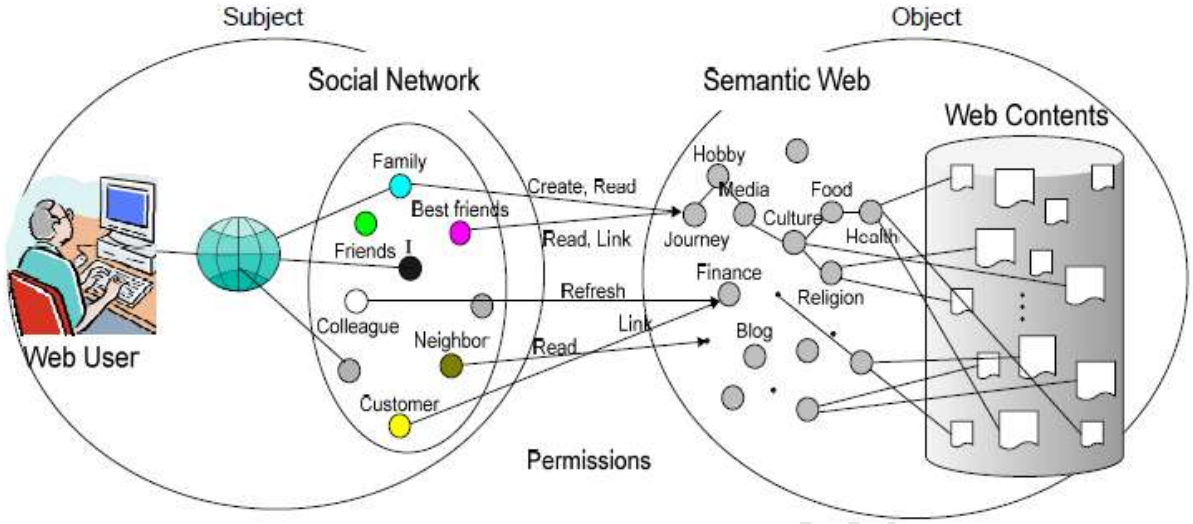



***Figure 5.4: The proposed architecture of the privacy enhanced access control model.***

(Source: An Approach to Privacy Enhancement for Access Control Model in Web 3.0. *2008:* 1049)

The approach to online privacy enhancement outlined above by the access control model which makes use of Semantic Web capabilities theorised by Cho et al, has the potential to be extended through the social network online characterised by the current Web 2.0 version of the Internet and provide not only the online but also the offline solution to user privacy and protection of information. The model could potentially be implemented to the rights protection policy for contents such as books, e-books, music, records, films, etc which are currently shared via peer-to-peer (P2P) environments on the Web.

Chapter five discussed the "commons" in the context of the digital cyberspace. The pluralistic definitions of the concept of privacy was also analysed with the initial utopian ideal of a "virtual community" being debunked, and in its place, a more realistic vision of privacy within an online user context being presented. The growing importance of the protection of online user privacy is increasing and was also highlighted. Chapter five argues that the introduction of Semantic Web technologies and capabilities brought about through the potential evolution of the Web, from Web 2.0 to Web 3.0 can have the technological ability to provide a panacea for the current online

privacy impasse, which seems not to be able to be resolved in the current Web 2.0 version of the Web or through in the intervention of government or legislation.

## Chapter 6:

### Understanding online behaviour within a South African user context: - *How South African online consumers make use of the Web*

Over the last sixteen years, there has been exponential growth in Internet access in Africa. In 1993, only four countries in Africa had access to the Internet. By 2000, 53 out of 54 African countries and territories had access to the Internet, Eritrea being the only country without Internet access (Scurr, 2000: 65). Internet usage in Africa is the most prevalent in South Africa, which accounts for the most Internet usage on the continent. In a 1997 industry survey, South Africa was ranked sixteenth in the world in Internet usage (Scurr, 2000: 43).

In 2008, the Internet user base in South Africa has seen its highest rate of growth since 2001, increasing by 12.5 percent to 4, 6 million users (Internet Access in South Africa Report 2008). The increased growth rate is set to continue unabated within the next five years, taking the Internet user population to the nine million user mark by 2013 (Internet Access in South Africa Report 2008). According to the Internet Access in South Africa Report published in 2008, growth in Internet connectivity in South Africa has come largely on the back of dramatic adoption of broadband offerings by small businesses, which account for half of the growth in the Internet market in South Africa, mainly through connecting via Asymmetric Digital Subscriber Line (ADSL) links (Internet Access in South Africa Report 2008). Industry experts believe that once the majority of South Africans are connected to broadband or a high-speed network, the Internet will come into its own as an environment for business collaboration and personal interaction (Goldstuck 2008). According to the Google country manager in South Africa, Stafford Masie, South Africa is expected to become one of the cheapest places in the world for Internet connectivity in the future, especially with broadband speed and infrastructure which was implemented for the FIFA 2010 World Cup (Digital South Africa Report 2008).

The following chapter will discuss the research which was conducted for this thesis, documenting the online user behaviour of a cross section of South African citizens. The research and the subsequent findings which will be discussed aim to understand the way South African consumers make use of the Web as well as how the potential evolution to a Semantic Web would affect these users.

6.1 Research statistics:

In total, one-hundred respondents completed questionnaires between the periods of January to August 2010. In terms of the gender split among interviewees, 63 percent were female and 37 percent male. Among the respondents who were interviewed, 57 percent were White; 20 percent Black; 15 percent Coloured; and 8 percent Indian. Although there are contrasting disparities in terms of the quantity of respondents among the various racial categories, the racial demographic used in this study attempted to make use of a wide cross section of the South African population for the purpose of this study. With regard to geographic location, the cross section of the sample of respondents came from the four major urban regions in South Africa, namely, Cape Town, Gauteng, Kwa-Zulu Natal and Port Elizabeth. 48 percent of respondents were employed full-time at the time of the research being conducted, with 40 percent of respondents indicating that they were students at some form of secondary or tertiary institution, with 12 percent of respondents unemployed during the time of the research survey being administered. 99 percent of respondents were South African nationals, which is a crucial statistic especially as the research conducted aims to better understand the way South African online consumers interact with the Internet and how the potential evolution to a Web 3.0 version of the Internet may affect their online user behaviour and media consumption patterns.

6.2 Overview of Internet access within a South African context:

This section of the research aims to better understand how South African citizens are accessing the Internet as well as how regularly they do so, and what challenges or barriers, if any, are prohibiting them from doing so regularly. Participants of the survey where asked the closed-ended question "Did you have access to the Internet in the last seven days?" As figure 6.1 indicates, approximately 83 percent of respondents had access to the Internet with 17 percent of participants indicating that they had not had any form of access to the Web within the last seven days. When those respondents were asked why they did not have access to the Internet in any form over the last seven days the following responses were offered;

**RES 31:**

- *"Don't own a computer"*

**RES 33:**

- *"Don't have access to a computer or laptop"*

**RES 42:**

- *"I don't own my own computer or an Internet connection at home"*

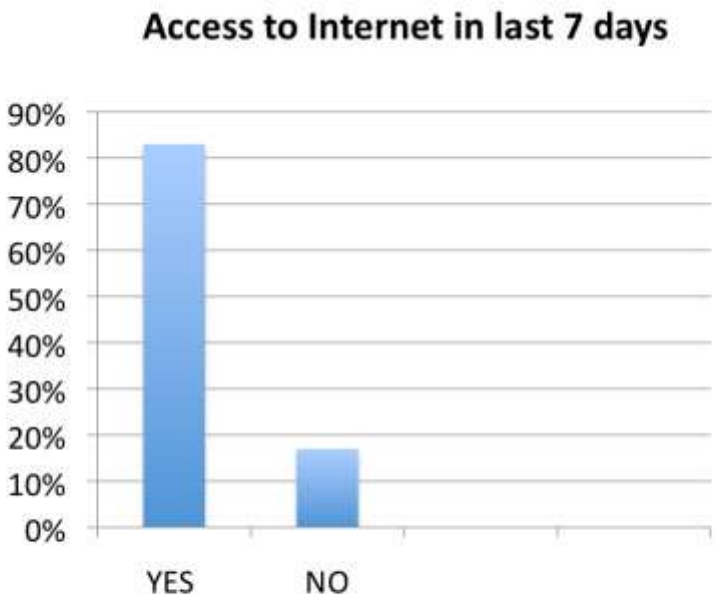



***Figure 6.1***

The term "digital divide" has been applied to the gap that exists in most countries between those with ready access to the tools of Information and Communication Technologies (ICT), and the knowledge that they provide access to and those without access or skills (Cullen 2001). Deschamps (2001) defines the digital divide as the growing gap between those in various parts of the world which have easy access to knowledge, information, ideas and works of information through technology and those who do not. According to Andrew Rens, the concept of "digital" is incredibly important when discussing the concept of the digital divide. Rens stresses that it is digital technology which people in the developing world, such as South Africa, lack access to,

not necessarily knowledge. Rens indicates that "poor" people have knowledge, but it is discounted and unrecognised by the globalised economy (Rens 2010).

Simply put, in the context of this thesis, the digital divide is the division between those who have access to ICT and are using it effectively, and those who do not. South Africa experiences the fissure of a digital divide as severely as any other developing nation in the world. The lack of access to information and communications technologies has had a profound effect on a large majority of previously disadvantaged citizens in the country which has excluded the masses as technology and access to information has consistently evolved, leaving many South Africans behind in its electronic wake. Socio-economic circumstances, imbalanced education polices under the apartheid regime, as well as language barriers, are some of the aggregating factors recognised in this exclusion which has contributed to the formation of the digital divide in South Africa and among the majority of the population. The lack of access and skills pertaining to ICT in South Africa, which has led to the existence of the digital divide, also referred to as digital exclusionism, has been likened to the inequality that existed in the country under the apartheid system which has contributed to major economic and social inequality among a large proportion of citizens who were previously and continue to be disadvantaged.

The research for this thesis also attempted to better understand how South African's, which were interviewed for the purpose of this thesis, gained access to the Internet. As figure 6.2 indicates below, over 70 percent of online users interviewed made use of an ADSL connection when accessing the Web.

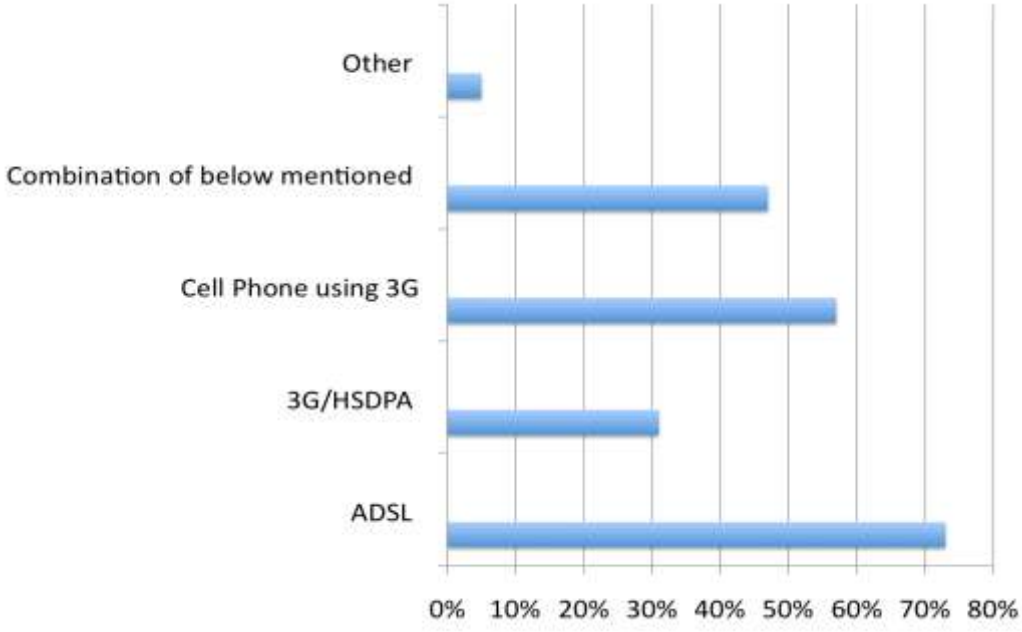
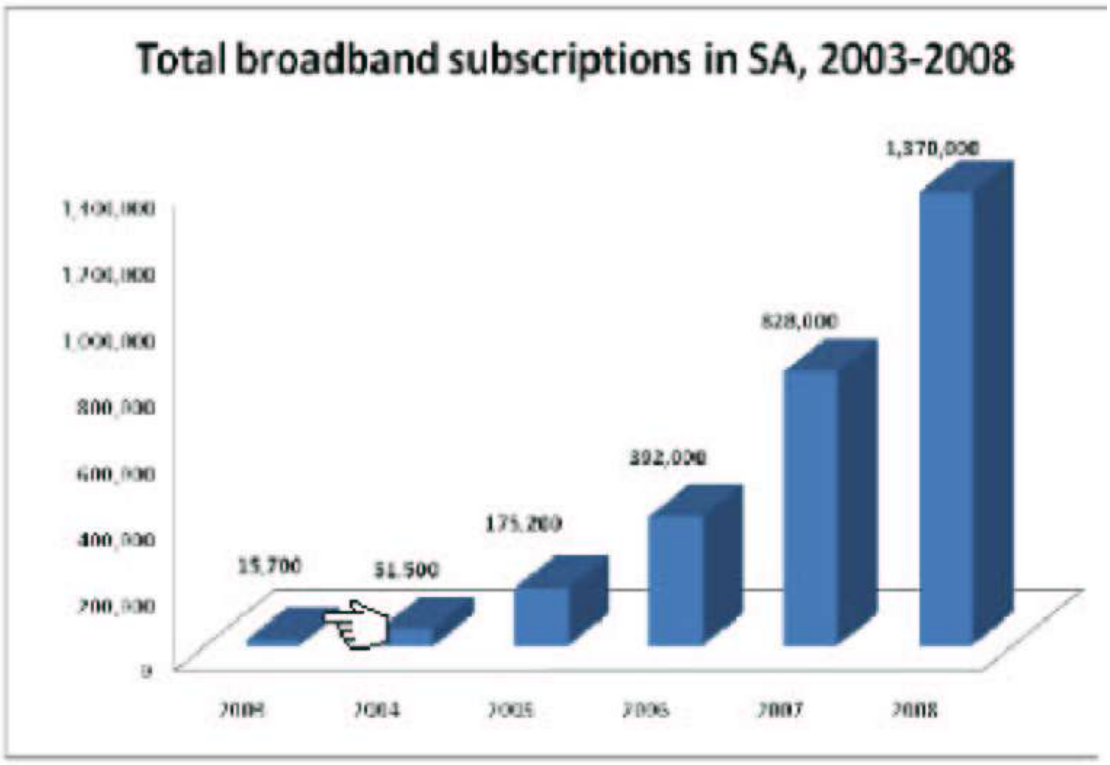


***Figure 6.2***

The research which has been gathered above is consistent with South African online connection trends within a macro context as figure 6.3 below indicates. The total broadband subscriptions in South Africa over a five year period has grown exponentially as the access to faster and more efficient Internet service providers have entered the South African online market.




(Source: Information Society Statistical Profiles 2009 – Africa)

***Figure 6.3***

During the last five years, developed countries around the world have taken positive initiatives to invest in broadband capabilities as a driver of economic development in their regions and countries (Rens 2009). In South Africa specifically, the country has pursued a number of strategies to attempt to promote affordable broadband to its citizens. A 2009 World Bank report has analysed the direct impact of broadband on growth in 120 countries from 1980 to 2006,

showing that each ten percentage points of broadband penetration results in a 1.21 percent increase in per capita Gross Domestic Product (GDP) growth in developed countries, and 1.38 percent growth in developing countries (World Bank 2009).

Broadband as a technology is not only capable of providing high speed networks; it also has the ability to provide for an interactive platform of technologies that can enable ordinary citizens and users of the Internet to produce, share and distribute content and information on the Web. In a country like South Africa, where there are more Internet users than PC owners in the country, shows that the use of broadband technology in South Africa is more likely to become ubiquitous on mobile devices as they are on the Internet. Broadband has the ability to help all South Africans, both privileged and under-privileged alike. Without wide access to affordable broadband, South African youth, especially those impacted upon by socio-economic factors, are faced with unequal access to the opportunities, experiences, skills and knowledge that would be the critical building blocks that would prepare them for full participation in the new knowledge economy.

Over 50 percent of respondents in this study had unlimited access to the Internet at home, connecting to the Web through home PCs or laptops and using a private home ADSL or 3G/HSDPA (High Speed Downlink Packet Access) connection, with approximately 48 percent of respondents having to access the Web from various other connection sources. As figure 6.4 illustrates, the majority of respondents accessed the Web in South Africa through a combination of connection sources. Connection to the Internet via user's cell phones indicated that mobile access of the Web is an extremely popular way of gaining access to the Internet within a South African online user context.

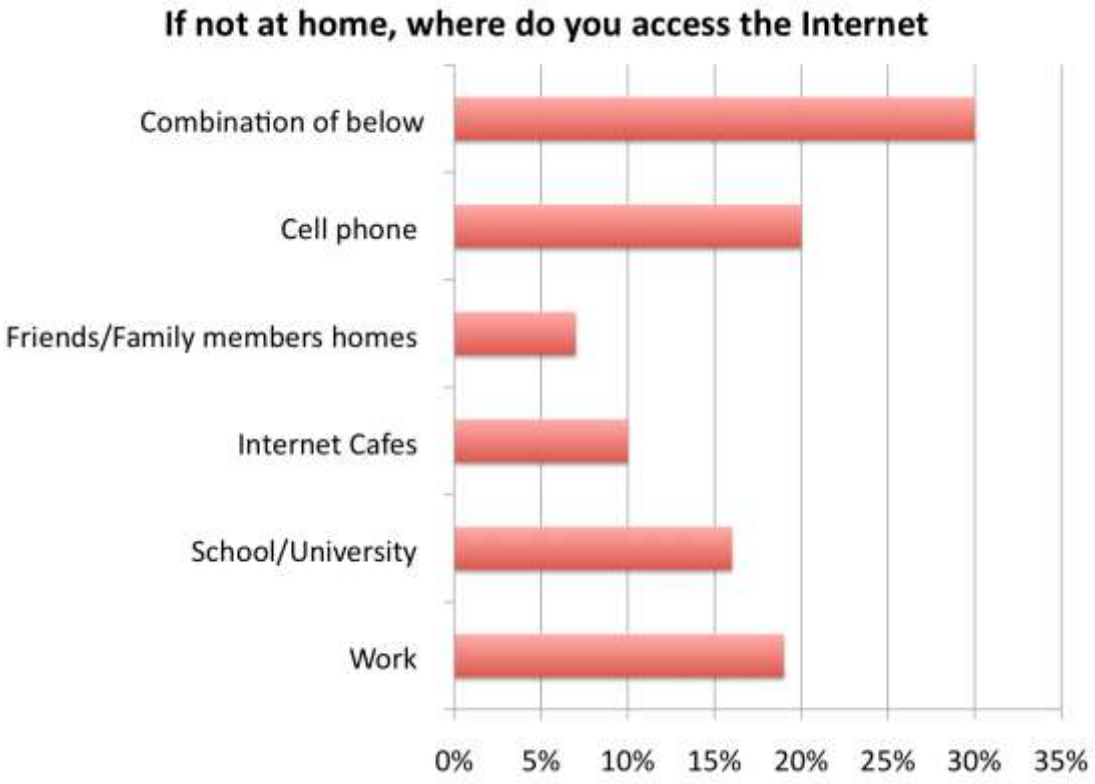



***Figure 6.4***

Within South Africa, 90.16 people in every one-hundred use a cell phone (Walton 2009). However, various independent research conducted over the past few years have contradicted how many of these cell phone users are actually accessing the Internet via their mobile devices (Joubert 2008; Goldstruck 2009; Walton 2009). Discrepancies as large as 9.5 million people who are using their cell phone to access the Internet in South Africa has been recorded (Walton 2009). In 2008, South African mobile service provider Vodacom estimated that the amount of unique cell phone users within South Africa who were accessing the Web via their cell phones using Wireless Application Protocol (WAP) was approximately double in size in terms the amount of South African Internet users, who were gaining access to the Web, via fixed line services (Joubert 2008). Rick Joubert, the head of mobile advertising at Vodacom, in 2008, analysed the most popular mobile Web destinations for South African users and estimated that by early 2009 there would be more than ten million South African users accessing the Internet via their cell phones (Joubert 2008). In comparison, in 2009, South Africans gaining access to the Web via fixed line services was estimated at only five million people (Joubert 2008). Conversely, Goldstruck (2009) questions these research findings. Goldstruck points to a proprietary study which was conducted by his Internet research company - World Wide Worx -

which found that a considerably lesser amount of South African cell phone users were using their cell phones as their primary device to access the Internet. Goldstruck and his research firm estimated that in 2009 only 500 000 South African cell phone users were accessing the Internet via their hand-held phones (Goldstruck 2009).

It is possible to reconcile the commercial research discrepancies highlighted above by grounding the research into South African cell phone access to the Internet through an academic research approach. An academic model (Donner & Gitau 2009) which differentiates between mobile primary and mobile only Internet use, can be adopted to make sense of research which has been previously conducted. The model proposed by Donner & Gitau recognises that many people have some kind of access to the Internet on traditional computer or laptop devices, but in addition, that they are more comfortable using their phones, or perhaps they have to use their phones most of the time when attempting to access the Internet (Donner & Gitau 2009). The theory proposed by Donner & Gitau, can also be supported by the research conducted for this thesis. In figure 6.2 mentioned above, respondents indicated that their preferred connection to the Internet in South Africa was via ADSL (73 percent), followed by a 3G/HSDPA connection (32 percent). In addition, respondents also revealed that connection to the Web via their cell phones was also a popular method of gaining access to the Internet (58 percent). However, more importantly, approximately 48 percent of respondents mentioned that they made use of a combination of access options including ADSL, 3G/HSDPA and cell phones when connecting to the Internet. This data is therefore consistent with the theory described by Donner & Gitau (2009).



6.3 Media channel consumption among South African online users:

Based on the research conducted for this thesis, respondents interviewed indicated that within a South Africa media context, as figure 6.5 below indicates, traditional media channels, namely T.V. and radio still dominate the South African media environment. This can be attributed to the relatively slow, and limited widespread adoption of the Web by South African consumers, which is based on a number of variables including; access to broadband and other technology required to make use of the full potential of the Internet. However Internet penetration continues to grow in South Africa. As research for this thesis indicates, with just fewer than 50 percent of respondents already making use of the Web to access online websites, with a combined 34

percent of respondents making use of the Internet to access content and information through various links online as well as various blogs.

When respondents were asked to indicate what the major advantage is of making use of the Internet in comparison with other media channels at their disposal, the following responses were given;

**RES 01:**

- *"Always receive the latest content, something that happened 1 minute ago will be online immediately. Internet also gives you access to everything."*

**RES 32:**

- *"Access to info. Stuff you won't see on TV."*

**RES 12:**

- *"The vast nature of the Internet allows me to find many different sources, angles or views on a particular subject. It allows me to stay updated with the world. Convenience."*

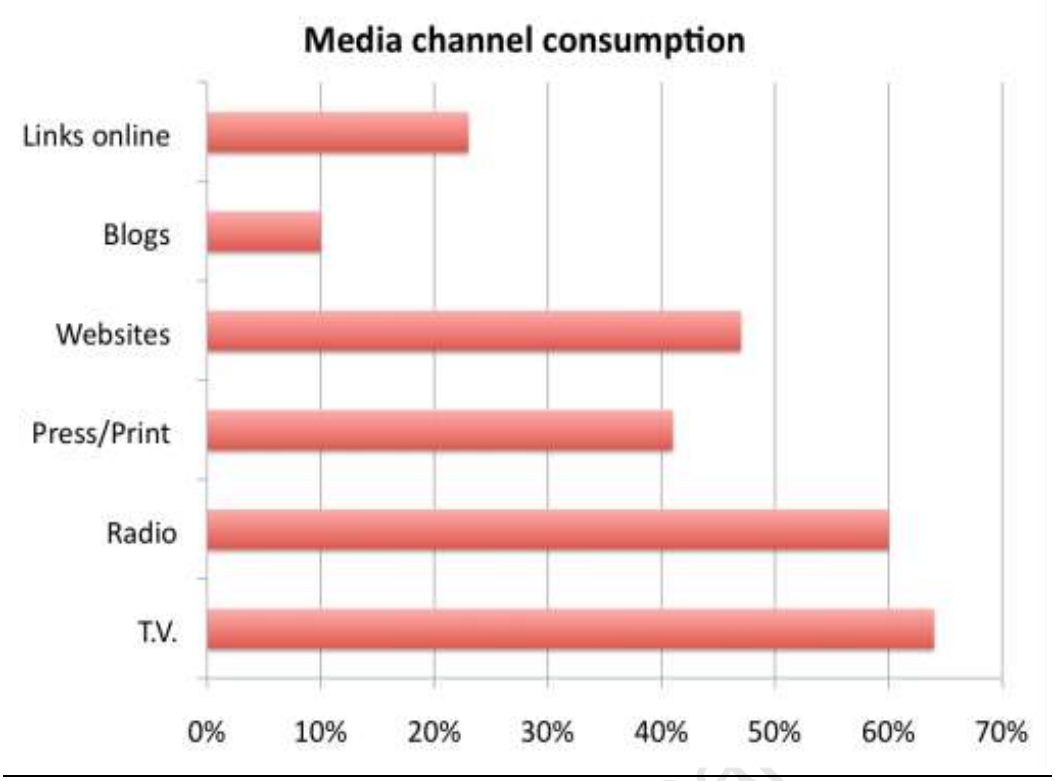



***Figure 6.5***

When respondents were asked what they were doing when online, as figure 6.6 suggests, over 85 percent of respondents were engaged in some form of social networking. Other forms of electronic communication such as sending and receiving e-mail also contributes to a large amount of activity spent online by participants. So why have social networks become so dominant within society and on the Web within such a short period of time? The most important reason for the rise of social networking has been attributed to the concept of the network effect. The theory of the network effect (Vail 1908) is an economic theory, also referred to as the network externality effect and theorises the effect that one user of a good or service has on the value of that product to other people or users. network effect become significant after a certain subscription percentage has been achieved, called critical mass. At critical mass point, the value obtained from the good or service is greater than or equal to the price paid for that good or service (Vale 1908). In the context of social networks, the network effect implies that the audience of a social network will grow slowly at first, and then rapidly proliferate once it passes a certain point, hence reaching a state of critical mass.

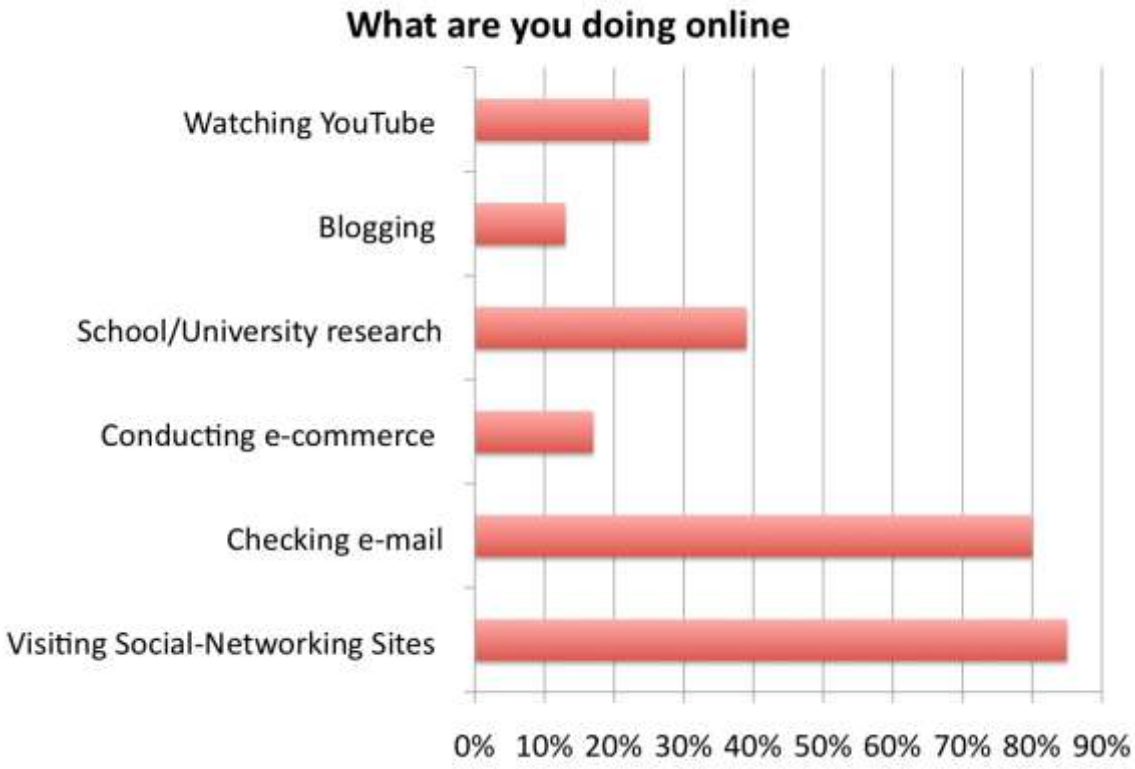



***Figure: 6.6***

6.4 Social networking within a South African online context:

In terms of the research conducted for this thesis and the respondents interviewed, the youngest respondent from the thesis research sample was 16 years old and the oldest respondent 63 years old. The primary research conducted for the purpose of this paper is also supplemented by a TNS Research Survey which was conducted a 2010 survey - MWEB's Friendship 2.0 - with a selection of participants of varying demographics to identify which social networking platforms are popular among South Africans and to further interrogate what exactly these users are doing on the various sites. The MWEB survey made use of 401 respondents who were interviewed on TNS Research Surveys' online panel. The respondents used for this particular survey were aged 16 years or older, and the data is representative of the South African online population in terms of age, race and gender. The data represented in this study was also weighed to bring age, race and gender into line with AMPS figures. This research adds weight and additional insight to this thesis in terms of better trying to understand how South African online users make use of the Web.

6.5 South African online user social networking behaviour:

On average, adult social networkers in South Africa are in their thirties, employed full-time and describe themselves as sociable and outgoing individuals. Facebook is the preferred social networking platform of choice among South African online users, with approximately 82 percent of Internet users making use of the service. Behind Facebook comes YouTube, with 32 percent of users frequenting the video-sharing site, then South African mobile phone social networking service MXit at 29 percent user adoption followed by Twitter, a relatively new social networking tool within a South African context enjoying 28 percent user adoption.

Social networking is in the process of changing the format of personal networks in South Africa. Many online users are now making friends and even meeting potential partners online. The impact of social networking is also beginning to expand personal networks with the average online user in South Africa claiming to have approximately 158 friends they regularly interact with online. According to Carolyn Holgate, the General Manager of MWEB Connect, "Social networks have really become the garden fence of the twenty-first century, and are used to very much the same purposes as community meeting places. We are at the end of the early adoption phase, which was dominated by young people, and social networking is now a mainstream activity enjoyed and used by all age groups, particularly those in their thirties" (Holgate, MWEB Friendship 2.0 survey 2010).

The MWEB survey revealed that the average age of Facebook users in South Africa is 33 years old; MySpace is 32 years old; Twitter and YouTube is 31 years old. The youngest demographic in the survey conducted chose MXit as their preferred platform of choice with an average age of 27 years old. These research findings dispel the notion and perceptions that social networking within a South African context is mainly prevalent among teenagers.

6.6 Multiple presences:

Many online South Africans are also taking up multiple presences using a combination of Facebook, Twitter and MXit accounts. To facilitate the integration between these multiple platforms, the online users link their various accounts to each other, which enable visitors to their Facebook pages to view their Twitter updates and also have the ability to click through to their MySpace profiles. However on certain social networking platforms it's more a matter of viewing

than doing. For example, 75 percent of MySpace users are only passive "viewers", moving from one profile to the next. Similarly, 72 percent of Twitter users are "lurkers", reading what other users post. This may be due to the fact that Twitter is still relatively new to South African online users and users do not have the option of accepting people who would like to follow them. Users can also be more concerned about what their followers may think of the comments that they post and are concerned about coming across as foolish. Social networking sites Facebook and LinkedIn are the most balanced, with 60 percent of their users classed as "viewers", who just view other people's pages, and 40 percent actively posting their own information regularly (MWEB Friendship 2.0 Survey 2010).

South Africa currently has just fewer than 5 million active Internet users who have access to the Web on a daily basis (Goldstruck 2008). Among these Internet users are a number of different types of "netizens" who make use of the Internet for varying purposes. The Internet user profiles which are established below have been compiled using AMPS 2007B data to provide insight into what online consumers ranging from ages 16 to 50+ make use of the Internet for in-terms of usage behaviour patterns.

**Age: 16-24 years olds:**

This demographic segment uses the Internet mainly to download music, visit dating and gaming sites. The majority of time spent online is concentrated on chatting online, making use of social networking sites such as Facebook, MSN, Twitter and Skype. Approximately 50 percent of all online gaming, dating, social networking and online chatting as well as music downloading are attributed to this consumer segment in South Africa. This consumer segment also has a below-average use of traditional forms of Internet communication such as e-mail and prefer to consume their news and media content electronically through making use of online magazines and newspapers. Only 14.8 percent of consumers within this segment make use of online shopping or e-commerce. This low adoption rate of e-commerce by this younger demographic can mainly be attributed to the lack of access or ownership of credit cards which are a vital tool when conducting online shopping. Consumers within this segment would either need to get the permission of their parents or guardians to purchase anything online that they desire which would have a major effect on e-commerce adoption and consistent usage.

Although this segment could be classified as having a scarcity of capital and finance to fund their e-commerce ambitions and activities, at the same time they can be seen as having an abundance of time on their hands. This has resulted in consumers within this age segment to spend a lot of time online researching products or brands which they either will end up buying online with the permission or help from their parents or even in a traditional "brick and mortar" retail environment. This segment seems to always consult the Internet in-terms of doing their research and background checks before they purchase anything with the online or off-line world.

**Age: 35-49 year olds:**

This segment makes up for the majority of online banking and shopping in South Africa. Over 42 percent of online banking is conducted by this consumer segment while 48 percent of online shoppers fall into this age bracket. This segment of online users is more than comfortable with working with money online, with online share trading and online gambling also popular activities in conjunction with online banking activities. In South Africa this segment contributes to 46 percent of online share trading and over 34 percent of online gambling. In terms of communication online, over one third of e-mailers sent throughout South Africa are done by this age segment. Instant messaging as a means of communication is also popular amongst this segment with approximately 36 percent of all instant messaging being sent by this group of netizens. Compared to the younger aged 16-24 year old segment, this segment has a below average interest in traditional, non-gambling gaming sites, popular social networking sites such as Facebook and Twitter and also do not spend a lot of time online downloading music. Dating sites are not as popular compared to the previous consumer segment, but just less than 25 percent of this age demographic still visits online dating sites each month.

**Age 50 + years:**

Only six percent of consumers aged 50+ have regular access to the Internet in South Africa, compared to that of one in every ten consumers younger than 50 years old. This consumer segment uses the Internet predominantly for online banking but unlike the 35-49 year old segment, online shopping and traditional e-commerce is not as popular with this older segment. Only 13.2 percent of online shopping or e-commerce is conducted by this age segment in South Africa.

The 50+ age group of online users have very little, to no interest in the social aspects that the Internet is able to afford users. Only a small percentage of users within this demographic spend anytime online making use of social networking sites like Facebook, MSN, Twitter or Skype with no time being spent visiting gaming or dating sites. They express no interest in downloading music form the web either.

6.7 The role of UGC within a South African online user context:

When respondents were asked the question "When online, do you actively contribute or collaborate to blogs, Wikipedia pages or any other form of uploading content to various sites besides updating your Facebook status or Twitter updates?" as figure 6.7 below indicates, just under 80 percent of participants indicated that they did not contribute in any form to UGC online. Conversely approximately 20 percent of respondents indicated that they did upload some form of content online at some stage over the last twelve months.

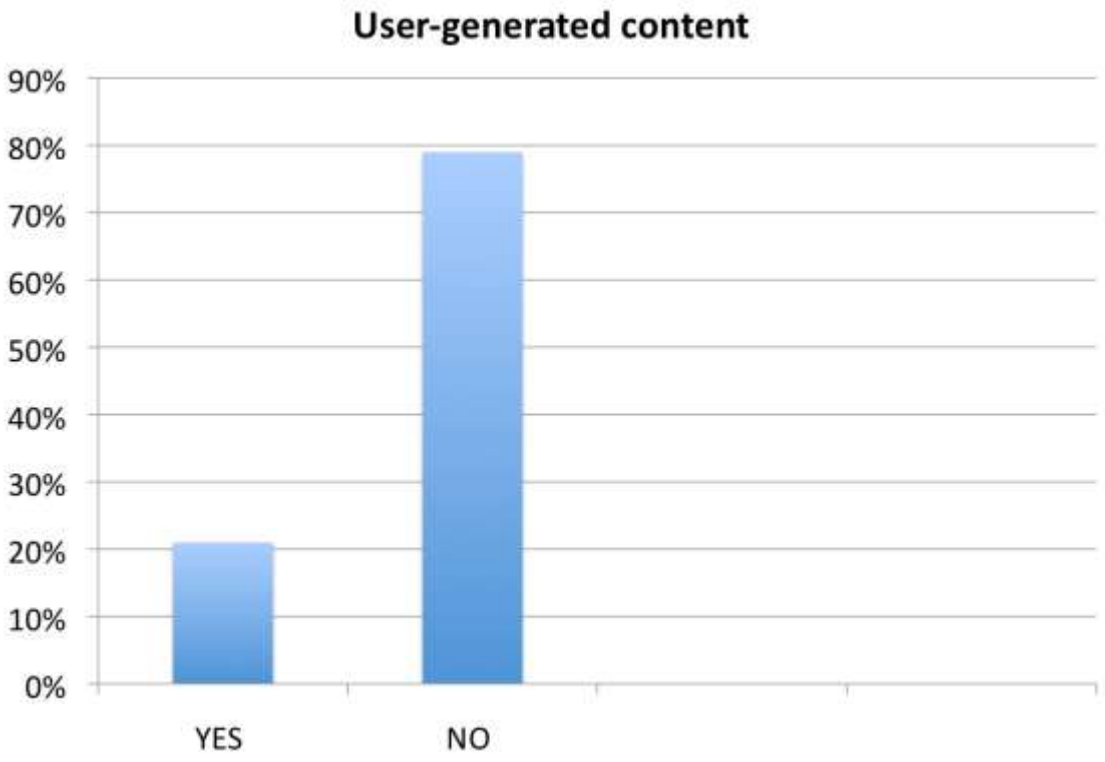



***Figure 6.7***

This insight is consistent with the theory of participation inequality also referred to as the "1-9-90 Rule" (Nielsen 2005). The theory contradicts the role of the Internet as a democratising tool of communication, where consumers have the ability to generate their own media and content. According to Nielsen's 1-9-90 rule, 1 percent of Internet users contributes regularly to social media content and is consistently adding or commenting on material that is generated online. The 9 percent of online users contribute occasionally but this is seldom original content but merely online consumers "interacting" with already established consumer created content through editing or adding comments to the existing material. The other 90 percent of users remain "lurkers" and merely visit sites and passively view content without interacting at all (Nielsen 2005).

Those respondents who indicated that they do in fact contribute to some form of UGC online indicated that the nature of their content contribution to the shape of the following material;

**RES 02:**

- *"Blogs. Usually feedback on what others have written"*

**RES 05:**

- ***"****Uploading pictures and images to Flickr"*

**RES 17:**

- *"Lifeasadj.com – Music/night scene orientation, interviews with dj's, etc"*

**RES 61:**

- *"My own blog – personal writing portfolio"*

**RES 79:**

- *"Blogging for personal musings"*

**RES 85:**

- *"Usually commenting on an article or other comments on political, social issues"*

The responses provided above by respondents are also consistent with the concept of levels of online user involvement (Ornebring 2008) which was highlighted in chapter five, and which makes the distinction between customisation and production within a UGC context. Ornebring theorises that various types of UGC describe different levels of involvement from online users. For example, being able to produce a video or an original article in the form of a blog and posting it online requires additional work than customising an existing piece of content and posting it to be consumed online (Ornebring 2008).

Those 80 percent of respondents who claimed that they did not in any way contribute to UGC online provided the following reasons for their inactivity online;

**RES 14:**

- *"There is better content on the Web already which has been put together for me to watch already. I prefer to be entertained with high quality content"*

**RES 31:**

- *"Amateur content isn't better than the professional stuff I can watch"*

**RES 50:**

- *"I prefer watching high quality stuff online produced by professionals"*

These responses are consistent with the concept of the various systems of production in terms of UGC (and which is explained in detail in chapter five). Based on the research conducted for this paper and among the respondents interviewed, the notion of centralised media even on the Internet maintains the dominant form of content consumption among the respondent pool used for this study. Due to the fact that centralised media still continues to have greater resources and

talent in terms of professional and well known content producers, online users within a South African context used for this study seem to believe that the content produced by these centralised media channels are of superior quality than that of amateur produced UGC online.

6.8 Research hypothesis:

The analysis of the research data which has been conducted for the purpose of this thesis will seek to support the following hypothesis; ***The role that Internet privacy will play is a fundamental variable in the adoption of a Semantic Web within a South African online context***. The research will attempt to highlight the current mistrust and scepticism among South African online users when it comes to their and others privacy online, which is exacerbated in terms of these users having to share information and content on the Web. The research will seek to prove that privacy online and the security of user data for South African users are a major factor in the way that these users interact on the Web and why the evolution to a third generation of the Web will assist in producing a solution to their privacy fears.

6.9 The role that Internet privacy will play is a fundamental variable in the adoption of a Semantic Web within a South African online context:

Privacy remains one of the biggest challenges on the current Web 2.0 version of the Internet and will remain a challenge for the Web in the future. When respondents who were interviewed for the purpose of this thesis were asked the question "Do you have Privacy concerns when interacting online?" as figure 6.8 below illustrates, over 70 percent of respondents indicated that they did indeed have some form of privacy concern relating to their information being online and who had access to it and what that information was being used for. These levels of privacy concerns expressed by respondents of the survey are also consistent with global privacy concerns with regards to the Internet and the exchange of information and data among users online, as well as the question and concerns regarding access by third parties to online users data and personal information as was described in chapter five of this thesis (Singleton 1998; Regan 2002; Macavinta 2000; Tedeschi 2001; Keck 2002 et al).

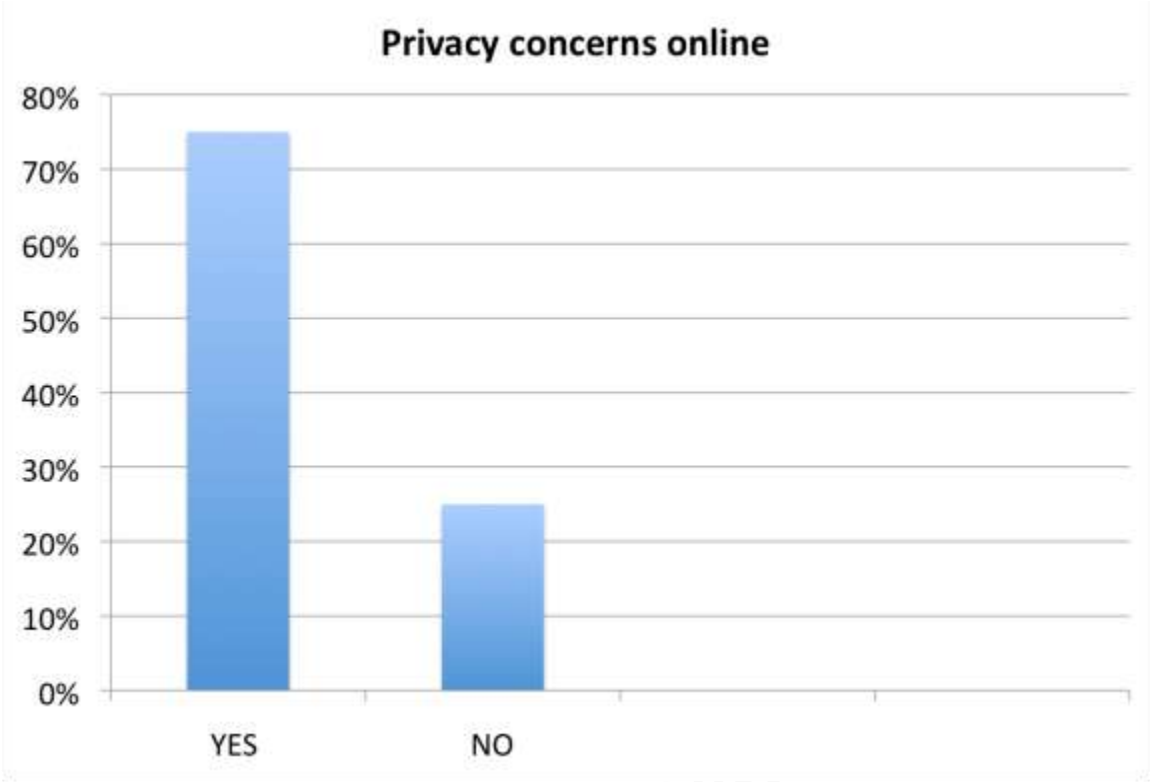



***Figure: 6.8***

Of the 70 percent of respondents that expressed concerns about their privacy online during the research for this thesis, respondents detailed what specific concerns they had online regarding their privacy. When respondents were asked the question with regards to what specific concerns they had the following answers were provided;

**RES 02:**

- *"People having access to information that I'm not interested in them having. Certain people finding out things about me I don't want them to. Issues regarding my safety and security."*

**RES04:**

- *"Do not want people accessing private/personal info. Also the security risk of people knowing where you live, cell number, and bank details, etc."*

**RES15:**

- *"That my content that I upload on the Internet does not really belong to me anymore and people have access and control over my intellectual contribution to the web."*

**RES29:**

- *"Strangers can view personal content and create/engage in malicious activities that can have a highly negative impact on your life."*

**RES38:**

- *"A company will know too much about me and take advantage of that info."*

**RES59:**

- *"Hacking is still at the forefront of everyone's concerns when it comes to transferring data across networks. 'Phishing' – criminally fraudulent process of attempting to acquire sensitive info such as usernames."*

**RES65:**

- *"The possibility of having my details, personal or not, leaked or displayed for anyone to access."*

**RES84:**

- *"Without keeping your personal details private, anyone can track you down and get hold of your details. It's just my personal preference as well. And giving out personal details is practically inviting criminals, or 'dodgy' characters into your life."*

A number of respondents in the survey also indicated that the issue of fraud and being the direct victim of fraudulent activities online was prevalent among their major concerns regarding their privacy on the Web. This increased anxiety perpetuates every time the media reports on stories or instances on the dangers of personal information that has been bought, sold or stolen online

(NY Times 2005). In sum total, data collection, in conjunction with the lack of privacy protection online, has resulted in the decrease of consumer trust online (Goldman 2006).

When participants were asked whether or not they are comfortable with sharing private information online, over 80 percent of respondents indicated that they are not comfortable with sharing private information online and try their best to refrain from doing so online if they can help it. As figure 6.9 shows, only just over 15 percent of respondents said that they would be comfortable sharing private information online.

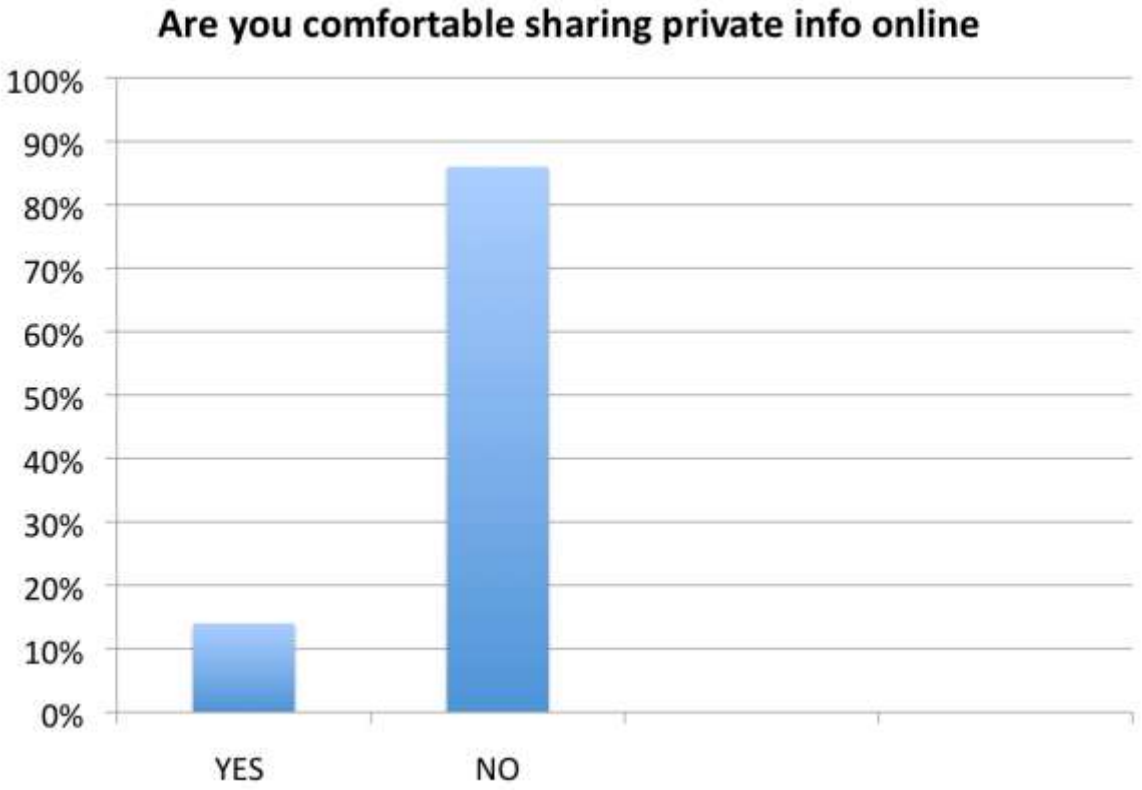



***Figure: 6.9***

When respondents who indicated they were comfortable with sharing private information online were asked the reason for their willingness to do so the following responses were given;

**RES 07:**

- *"Yes – as long as it is going to improve the Internet even more"*

**RES 08:**

- *"I already have and use Internet banking regularly"*

**RES 11:**

- *"I want targeted information that is suitable to my wants and needs"*

As the research data has shown above, these respondents are certainly in the minority when it comes to respondent willingness to place information online. Among the approximate 85 percent of respondents who indicated that they were not comfortable sharing data online the following participant responses were given;

**RES 02:**

- *"I don't trust who is receiving that info and how it will be handled"*

**RES 14:**

- *"Fraud is a big issue in S.A. and also in the world. Therefore my ID number, address, etc will be difficult for me to put online. Unless I know the company very well and I can trust it then maybe I will consider it"*

**RES 20:**

- *"I was taught that these things were private"*

**RES 23:**

- *"We are living in a highly evasive time. Consumers are sceptical and not willing to trust easily. I would be concerned that my personal info would be abused or taken advantage of"*

**RES 25:**

- *"Fraud levels are on the increase. Lots of spam and junk mail"*

**RES 27:**

- *"That just opens me up to being violated!"*

**RES 30:**

- *"It seems too risky, especially with the large amount of online theft going on and violence in S.A."*

**RES 34:**

- *"Don't want strangers to have info about me"*

**RES 64:**

- *"Laws governing privacy not in place yet that satisfy me"*

**RES 68:**

- *"Too many scammers/illegal activity online"*

The responses given by the respondents mentioned above and used for the purpose of this thesis are also similar to the academic theory discussed in chapter five (Cho, Moon, Park & Baik 2008). In the current version of the Web - Web 2.0 – content and information is still not satisfactorily protected. This is due to the fact that within a Web 2.0 architecture the concept and fundamental focus on personalised media, personal publication, personal broadcasting and of community are the main outcomes of a Web 2.0 model for the Internet.

Additional respondents to the question of sharing private information also indicated that if the Internet were able to give them some form of assurance of guarantee that their data and personal information could be safely and securely handled online, they would be more open and responsive to sharing their data and information with others online, this improving their overall user experience on the Internet. These responses were given as follows;

**RES 01:**

- *"Don't think I am ready for that yet. Maybe in 5 years time. Don't have enough trust just yet"*

**RES 04:**

- *"Will need proof that the info will be safe and my details wont land in the wrong hands. Need a reason to trust it"*

**RES 13:**

- *"I would answer 'NO', but if it is in the right context and can ensure a safe environment, the yes, I would. Technology is the way forward for convenience and power"*

**RES 15:**

- *"Proof must first be provided that new systems/programmes have been set up to ensure my safety. It has to be proven, tested and convincing"*

**RES 18:**

- *"Yes – because the Internet is constantly evolving, changing and improving. This means that it will become more trustworthy and ultimately be able to give out personal info will allow companies to communicate more directly with consumers"*

**RES29:**

- *"Providing that there is a 100% security guarantee"*

Chapter six attempted to analyse and discuss the way South African Internet consumers make use of the Internet in terms of their user behaviour, adoption habits and techniques. The final chapter of this thesis sought to understand the use of the Web within a South African online context, as well as how the Internet has grown in the country over the past decade and how a potential evolution of the Web to a Semantic Web would affect the countries users. As discussed in chapter five, the solution to the issue of privacy concerns among South African users interviewed for the purpose of this thesis can potentially be alleviated through the evolution of the Web to a Semantic Web version. As discussed by Yuh-Jong, Hong, Guang et al, Web 3.0 has the potential to provide a technological solution for online user privacy protection through the development and implementation of ontology-based Markup language, such as RDF(S) and OWL. Once this evolution to a Semantic Web or Web 3.0 is potentially realised, this evolution would have a profound effect on the way that South African online users make use of the Web as well as what they will potentially use the Web for in the future, as there online privacy would be able to be better assured. The fact that a climate of "loss of trust" online exists (as discussed in chapter five) - not only within a South African online context - but is a global challenge online, means that the potential evolution of the Web, which would facilitate the improved privacy environment online, characterised by a technological solution to online privacy through the emergence of Web 3.0, would provide a much needed solution to one of the biggest challenges to online users today on the Web. Options, which a Semantic Web would be able to offer, include the proposed architecture of a privacy enhanced access control model described by Cho et al

(2008), as well as a data user hierarchy which would be able to classify the data user class hierarchy.

**Conclusion:**

This limited study provided, proves that the evolution to a third generation of the Internet, referred to as the Semantic Web or Web 3.0, is certainly plausible in the coming years. Through the development of a standardised Web Ontology Language (OWL) that will allow all content found on the Web to infer meaning automatically and offer insights or information which otherwise would not have been apparent, the Web has the potential to evolve from the current Web 2.0 version of the Internet which is characterised by online users sharing, collaborating and communicating, to a Web which not only maintains the same functions which Web 2.0 provides users, but also has the potential to enhance the overall user experience and capabilities with a Semantic Web version of the Internet. As chapter one outlines, the evolution to a third generation of the Web is indeed possible from an architectural standpoint. Web 2.0's current major limitation is the fact that the concept of "meaning" is still largely discerned by its developers and the users themselves. Chapter one attempts to persuade the reader that what a potential Web 3.0 offering can provide are Semantic Web applications which will have the ability to infer meaning automatically as well as offer insights and information to the user which otherwise would not have been apparent within a Web 2.0 architecture.

The study of the political economy of "new" media has traditionally focused on the ubiquity as well as the various types of new media in terms of products and services which are made available to the user - in addition to the access to those new media tools - with a dearth of research dedicated to the accompanying structures and processes of power and subsequent hegemony that have become entrenched within them. With the result, the political economy of new media studies has placed an emphasis on actual media content with less of a focus on media structures as well as the labour involved in the production of media. Chapter two of the thesis attempts to make the argument that the political study of new media should focus specifically on the understanding and development of explanations for emerging social structures and hierarchies of power. In addition to this, the research and understanding of the study of new media should also extend to the symbolic form, meaning and action as well as to the structures of power and institutions as described by Mansell, Mosco, Garnham et al. This chapter forms an

integral part of the argument that the role of technological innovation – which an evolution to a third generation of the Web would characterise – would profoundly affect the way the political economy of "new" media would be studied, in terms of essentially understanding the political economy of new media and the role that "social values" and "regimes of control" play in becoming entrenched in the new media and what those consequences may be on society (Mansell 2004).

The current challenges and stumbling blocks which hamper the full potential of the Internet such as intellectual property rights and copyright disputes, which are very much part of Web 2.0, are discussed at length in chapter three and four of the thesis. These challenges which are highlighted in these chapters have the potential to be corrected through the evolution of the Web, as well as through advancements in technological and digital innovation, which a Semantic Web will offer (Prenafeta 2010). The use of Semantic technology which could be facilitated by the evolution of the Internet to Web 3.0, has the potential to be applied in copyrighted works which would provide less of an intrusive and controversial manner than that of, for example, the existing DRM system. In addition, the capabilities of HTML - which focuses mainly on the display of Internet content - appears to be a limited programming language in terms of the categorising of elements which circulate on the Internet, which results in a narrow understanding of the contents and data by machines and software applications on the current version of the Web (Prenafeta 2010). As the Web continually evolves into a Semantic version, the development of a supporting structure of a Semantic Web RDF in conjunction with the SPARQL query language, as well as the definition of OWL concepts which is facilitated by a Semantic Web, will make it possible to define as well as manage the distribution of contents on the Internet with a full compliance with copyrights, including CC and P2P networks (Prenafeta 2010).

The most damaging consequence of online user profiling is that it has fostered a climate of distrust amongst online users. Challenges such as privacy concerns for users of the Internet also have the potential to be resolved through Semantic Web capabilities. Chapter five discusses two potential solutions which are analysed and discussed. These two solutions which are offered are in the form of a Semantic enforcement of privacy protection policies via the combination of ontologies and rules (Yuh-Jong, Hong & Guang 2008) as well as an approach to privacy enhancement in the form of an access control model (Cho, Moon, Park & Baik 2008) which a

Semantic Web would be able to offer online users. Chapter five offers a technological solution to online privacy concerns, through the emergence of Web 3.0 capabilities in the form of the evolution of the Web, and the envisioned successful migration of the Internet from Web 2.0 to Web 3.0 which has the potential to provide a technological solution for online user privacy protection through the development and implementation of ontology-based Markup language, such as Resource Description Framework(s) (RDF(S)) and Web Ontology Language (OWL) (Yuh-Jong, Hong, Guang 2008). The chapter finally argues that the approach to online privacy enhancement which makes use of Semantic Web capabilities theorised by Cho et al, has the potential to be extended through the social network online characterised by the current Web 2.0 version of the Internet and provide not only the online but also the offline solution to user privacy and protection of information. The model could potentially be implemented to the rights protection policy for contents such as books, e-books, music, records, films, etc which are currently shared via peer-to-peer (P2P) environments on the Web.

The study of the South African online environment in the final chapter of the thesis also revealed the way South African users interact with the Internet as well as what these consumers are actually doing online and what types of media they are consuming. Challenges such as regular access to the Internet are also still a challenge for certain South African citizens due to the fact that some of the respondents interviewed for the purpose of this thesis did not have regular and consistent access to ICT capabilities. The research conducted for the purpose of this thesis attempts to support the research hypothesis, that the role that Internet privacy will play is a fundamental variable in the adoption of a Semantic Web within a South African online context. One of the major limitations of this study is the fact that only one-hundred sample respondents were interviewed for the purpose of this thesis. Therefore, the researcher cautions that the findings of this thesis should not be generalised due to the fact that one-hundred South African respondents do not necessarily represent the entire South African online population. Part of this concern, on behalf of the researcher, is that all respondents used in the research surveys were selected from LSM levels L9H to L10H, the new LSM rating scale released by AMPS in 2008. LH9 refers to LSM level 9 High, L10L refers to LSM 10 Low and L10H refers to LSM 10 High. These three LSM levels are characterised by households that earn upwards of R18, 079 per month, and for the basis of this thesis, these LSM levels were selected as these groups have

regular access to the Internet compared to other LSM categories within South Africa. The fact that a large segment of the South African population was excluded from this study also should then be taken into account when attempting to use these research findings to represent the whole of the South African online population. Therefore, a potential future study would be beneficial where a larger cross segment of the South African population could be used when doing a similar study of this nature. However, the research findings of this thesis proves, that the architectural improvements and technological innovation of a Semantic Web version of the Internet, would be a welcome improvement to the current version of the Web and that the evolution to a third generation of the Web will have a positive impact upon the Internet and media environment, both within a global and South African context, based on the research sample used for the purpose of this study.

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